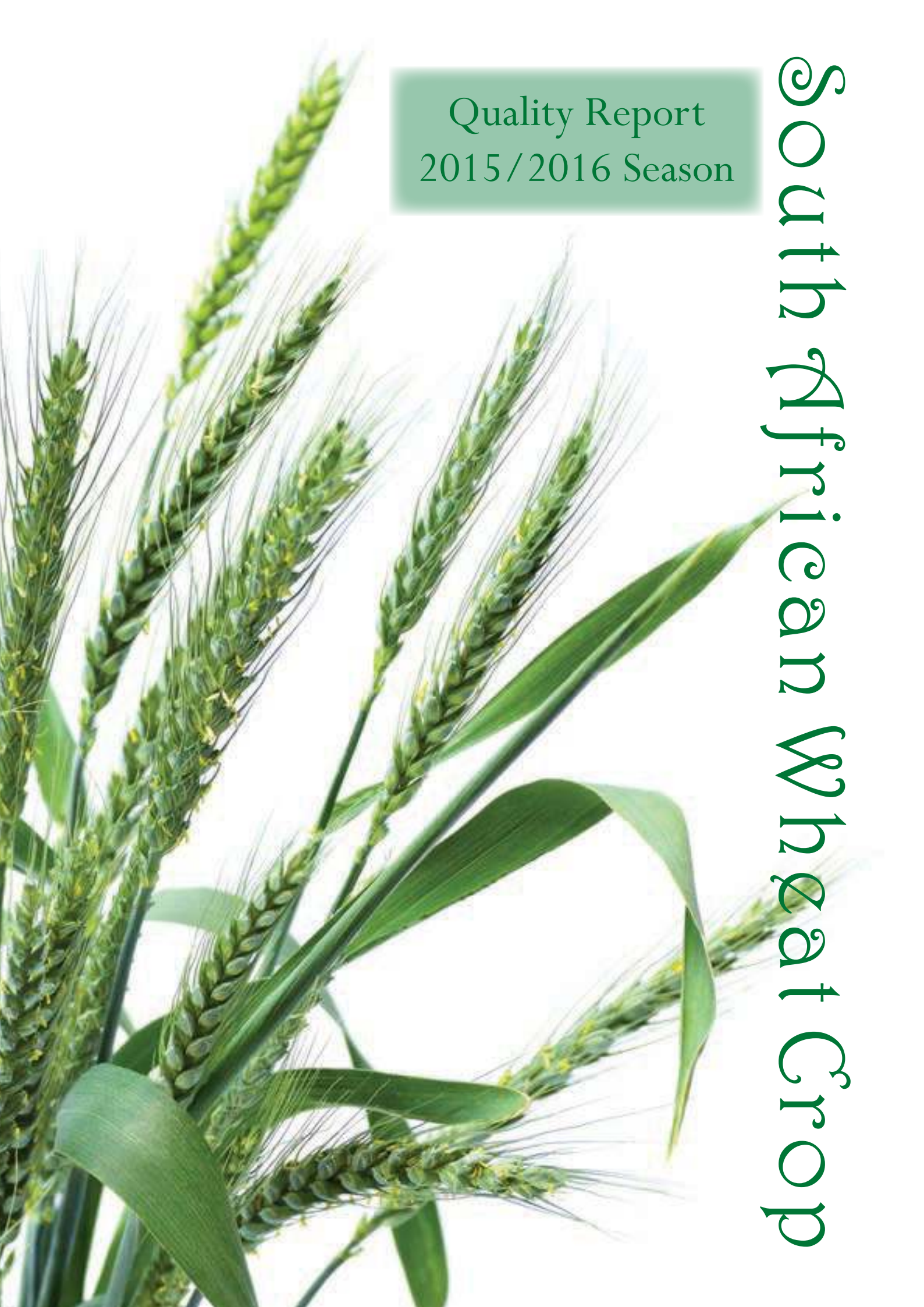
South African Wheat Crop

Quality Report
2015/2016 Season



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SOUTH AFRICAN
COMMERCIAL WHEAT QUALITY FOR THE 2015/2016 SEASON

Acknowledgements

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- The Winter Cereal Trust for its financial support in conducting this survey.
- Agbiz Grain and its members for their cooperation in providing the samples to make this survey possible.
- Milling companies for providing samples of wheat delivered directly to the mills.
- The Crop Estimates Committee (CEC) of the Department of Agriculture, Forestry and Fisheries 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 commercial wheat crop of the 2015/2016 season was set at 1.440 million tons which is 310 000 tons (17.7%) lower than the previous season's crop. A total area of 482 150 hectares was utilized for wheat production and the average yield was 2.99 tons per hectare (Figures obtained from the Crop Estimates Committee).

The whole wheat protein average of 12.8% increased by 1% compared to the previous season, the ten year national average is 11.7%. The percentage of samples having protein contents higher than 12.0% increased from 45.5% to 68.2%. The average hectolitre mass was 81.1 kg/hl, higher than the 80.2 kg/hl of the 2014/2015 season. The hectoliter mass of only 8.3% of the samples was below the minimum Grade 1 requirement of 77 kg/hl.

The average falling number this season was 393 seconds. None of the samples analysed gave falling number values below 250 seconds. The average mixogram peak time of 2.7 minutes was lower than the previous season's 3.0 minutes and also lower than the ten year average of 2.9 minutes.

Introduction

This report provides the results of the eighteenth 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 participates in one national and sixteen international proficiency testing schemes 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.

A sub-sample of each of these grading samples was collected in a bin according to grade and class per silo bin at each silo. This composite bin sample was then divided and a 3 kg sample was sent to SAGL for the annual wheat crop quality survey. SAGL analysed 252 samples to provide as best possible a proportional representation of the production of wheat in all of the different production regions.

Cultivar identification was done on these samples and sales figures of seed sold by the commercial grain silo owners were requested. The samples were graded and the thousand kernel mass determined. Sub-samples were milled on a Quadromat Junior mill for a mixograph analysis.

Composite samples were made up per class and grade for each production region and milled on a Bühler MLU 202 laboratory mill. Moisture, protein, ash and colour were determined and a RVA analysis conducted. Rheological tests, namely gluten, mixogram, farinogram, alveogram, extensogram and 100-gram baking tests, were then performed.

The results (as averages per region) are made available weekly on the SAGL website (www.sagl.co.za) as soon as the first samples are received. The hard copy reports are distributed to all Directly Affected Groups and interested parties and are also available for download in a PDF format from the website.

In addition to the quality information compared over a number of seasons, production figures (obtained from the Crop Estimates Committee (CEC)) relating to hectares planted, tons produced and yields obtained on a national as well as provincial basis, over a ten season period, are provided in this report.

SAGIS (South African Grain Information Service) supply and demand information over several seasons is presented in table and graph format. Information with regards to the manufacture, import and export of wheat products as well as the manufacture of pan baked products is now also incorporated into the report.

Data on wheat imported for domestic use during the 2014/2015 (previous) season is included and compared to the quality of the local corresponding crop.

The national bread wheat grading regulations as published in the Government Gazette of 29 January 2016 are provided as the last section of the report.

The goal of this crop quality survey is to accumulate 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.

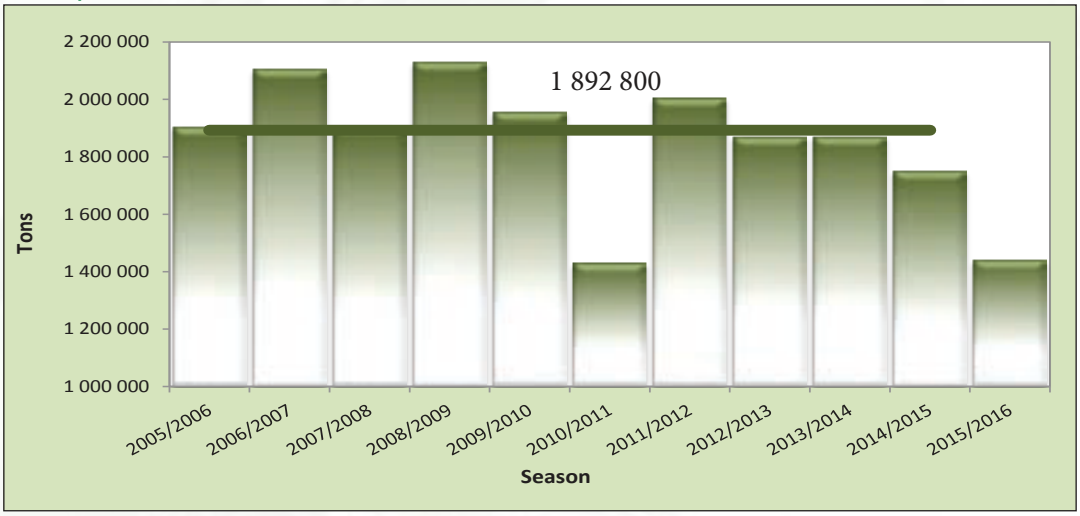
Production

Wheat contributed 77% to the total winter cereal crop production in South Africa this season. Other winter crops produced are barley for malting purposes and canola.

South Africa (made up of nine provinces) is divided into 36 crop production regions with wheat planted in about 28 of these regions. Please see Figure 1 (RSA Provincial map) and Figure 2 (RSA Crop Production Regional map) on pages 26 and 27.

The national Crop Estimates Committee's (CEC) estimated total production figures were revised, using as basis for the calculations, the South African Grain Information Services' (SAGIS) published figures of actual deliveries. Figures to determine on-farm usage and retentions obtained from a wheat utilization survey conducted by the Department of Agriculture, Forestry and Fisheries (DAFF), were added to the SAGIS delivery figures to calculate the final crop production figures.

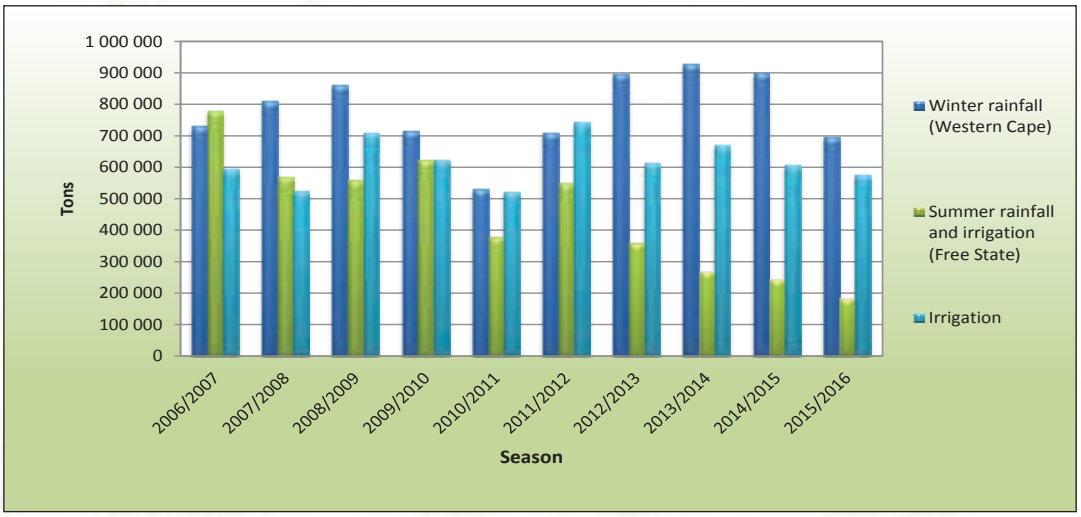
Graph 1: Wheat production in the RSA from the 2005/2006 to 2015/2016 seasons



Figures provided by CEC.

The final figure of 1 440 000 tons is 24% lower than the ten year production average of 1 892 800 tons (2005/2006 to 2014/2015 seasons). The Western Cape produced 697 500 tons of wheat this season, contributing 48% of the total crop. The Free State's production (184 000 tons) continued its declining trend and was 61 500 tons lower than the previous season. The Northern Cape's irrigation areas, the second largest producer of wheat with 259 200 tons, produced 25 800 tons less than the previous season. The remainder of the wheat were produced in mainly Limpopo with 151 200 tons representing an increase of 10% compared the 2014/2015 season and North West, whose production decreased by 18.8% to 87 000 tons. Please see Graphs 1 and 2.

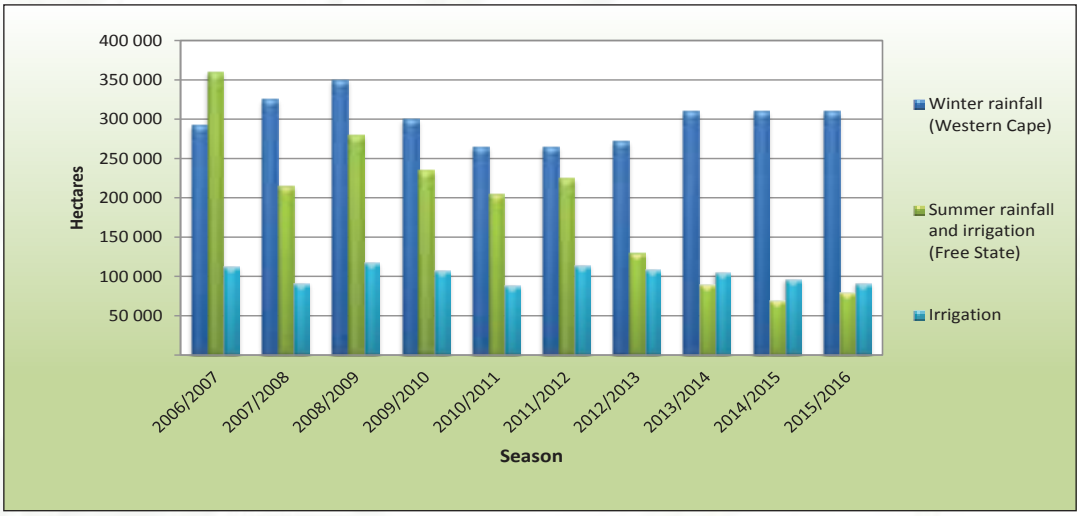
Graph 2: Wheat production figures per production area over seasons



Figures provided by CEC.

The area utilized for wheat production increased slightly by 1.2% to 482 150 hectares from 476 570 hectares in the previous season, see Graph 3. The effect of the drought conditions experienced in both the winter and summer rainfall areas is clear, seeing the reduction of 17.7% in the production figure.

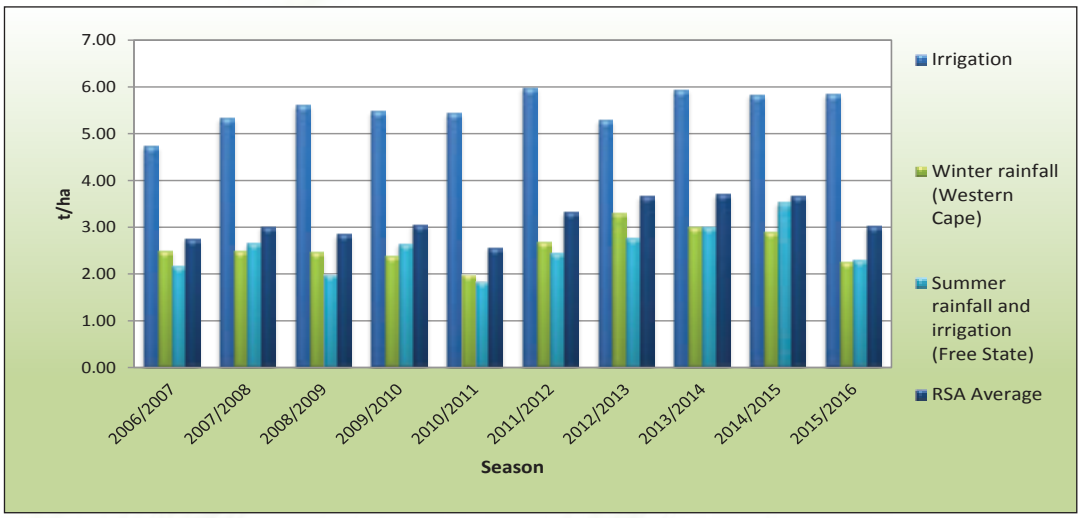
Graph 3: Area planted per production area over seasons



Figures provided by CEC.

The yield in the main production areas ranged from 2.25 tons per hectare (t/ha) in the winter rainfall area (Western Cape) to 7.20 t/ha for irrigation wheat produced in the Northern Cape. The national yield average declined from 3.67 t/ha in the previous season to 2.99 t/ha. This is the lowest average yield over the last five seasons. Please refer to Graph 4.

Graph 4: Average yield per production area over seasons



Figures provided by CEC.

Table 1 provides an overview of the dry land versus irrigation wheat production in the 2015/2016 season, compared to the 2014/2015 season.

Table1: Wheat production overview over two seasons

Province	Type of production	2014/2015			2015/2016		
		Hectares planted, ha	Crop, tons	Yield, t/ha	Hectares planted, ha	Crop, tons	Yield, t/ha
Western Cape	Dryland	305 800	856 000	2.80	305 500	680 500	2.23
	Irrigation	4 200	27 500	6.55	4 500	17 000	3.78
	Total	310 000	883 500	2.85	310 000	697 500	2.25
Northern Cape	Dryland	450	700	1.56	1 000	600	0.60
	Irrigation	37 550	284 300	7.57	35 000	258 600	7.39
	Total	38 000	285 000	7.50	36 000	259 200	7.20
Free State	Dryland	35 100	55 000	1.57	55 500	60 000	1.08
	Irrigation	34 400	213 000	6.19	24 500	116 500	4.76
	Total	69 500	268 000	3.86	80 000	176 500	2.21
Eastern Cape	Dryland	1 000	1 250	1.25	1 033	1 860	1.80
	Irrigation	2 000	10 750	5.38	2 067	13 020	6.30
	Total	3 000	12 000	4.00	3 100	14 880	4.80
KwaZulu-Natal	Dryland	-	-	-	-	-	-
	Irrigation	6 500	39 000	6.00	7 300	41 000	5.62
	Total	6 500	39 000	6.00	7 300	41 000	5.62
Mpumalanga	Dryland	200	690	3.45	-	-	-
	Irrigation	3 300	20 660	6.26	3 500	19 500	5.57
	Total	3 500	21 350	6.10	3 500	19 500	5.57
Limpopo	Dryland	1 500	1 200	0.80	1 500	1 020	0.68
	Irrigation	26 000	129 450	4.98	25 500	143 400	5.62
	Total	27 500	130 650	4.75	27 000	144 420	5.35
Gauteng	Dryland	80	200	2.50	50	100	2.00
	Irrigation	490	3 200	6.53	200	1 400	7.00
	Total	570	3 400	5.96	250	1 500	6.00
North West	Dryland	2 000	5 600	2.80	570	950	1.67
	Irrigation	16 000	101 500	6.34	14 430	84 550	5.86
	Total	18 000	107 100	5.95	15 000	85 500	5.70
RSA	Dryland	346 130	920 640	2.66	365 153	745 030	2.04
	Irrigation	130 440	829 360	6.36	116 997	694 970	5.94
	Total	476 570	1 750 000	3.67	482 150	1 440 000	2.99

Figures provided by CEC.

Supply and Demand

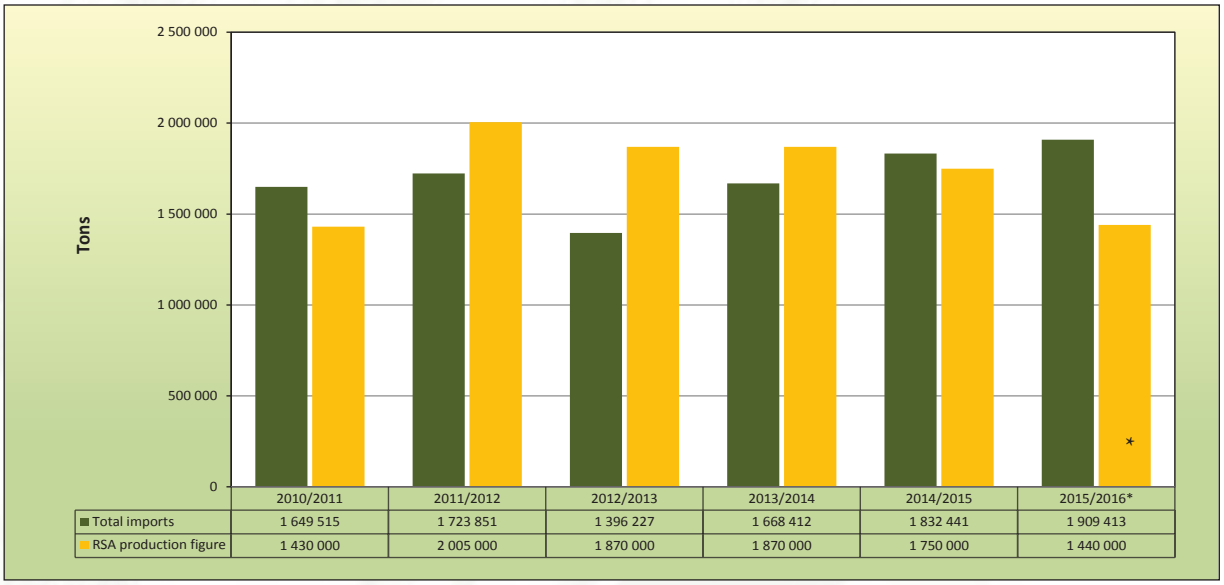
World wheat production for the 2015/2016 season is estimated at 734.80 million metric tons according to the *World Agricultural Supply and Demand Estimates (WASDE) report 557 of 12 September 2016*, world production for 2016/2017 is projected to be 744.85 million metric tons.

According to the *BFAP Baseline, Agricultural Outlook 2016 – 2025*, wheat area cultivated in the Western Cape is projected to increase in 2016 and 2017, consolidating at around 320 000 hectares towards 2025. The increasing trend in 2016 and 2017 is also expected with wheat produced under irrigation, while the summer rainfall area is projected to remain fairly constant during 2016 and 2017, declining marginally to 64 000 hectares by the end of the baseline period. By the same time, the irrigation area cultivated are expected to have declined somewhat to just more than 85 000 hectares.

South Africa is a net importer of wheat and relies on imports to supply the growing local demand. During the 2014/2015 season 1 832 441 tons of wheat were imported from mainly the Russian Federation (719 784 tons). Please see pages 78 to 95 for the quality of the wheat imported during 2014/2015. During the same period 274 255 tons of wheat from South Africa were exported to countries like Zimbabwe, Botswana and Zambia.

The amount of wheat imported for local consumption so far during the 2015/2016 marketing season, amounts to 1 909 413 tons according to SAGIS. This figure includes imports up until 2 September 2016. The marketing season commences on 1 October every year.

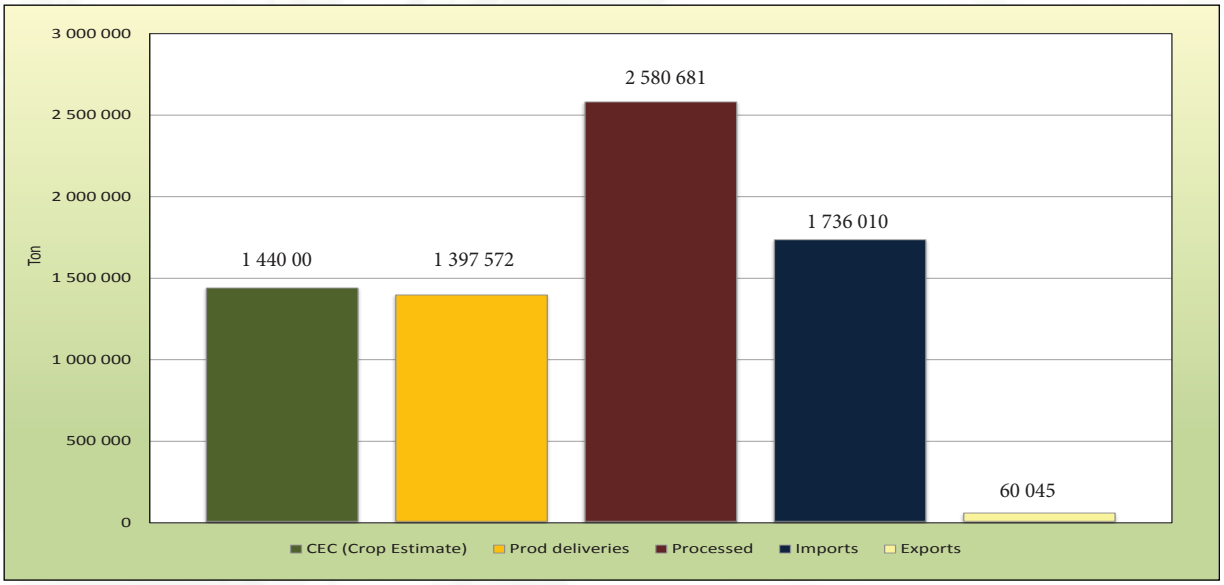
Graph 5: RSA production figure versus the total import figure over six seasons



	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016*
Total imports	1 649 515	1 723 851	1 396 227	1 668 412	1 832 441	1 909 413
RSA production figure	1 430 000	2 005 000	1 870 000	1 870 000	1 750 000	1 440 000

*2015/2016 season figure includes imports up to 2 September 2016.

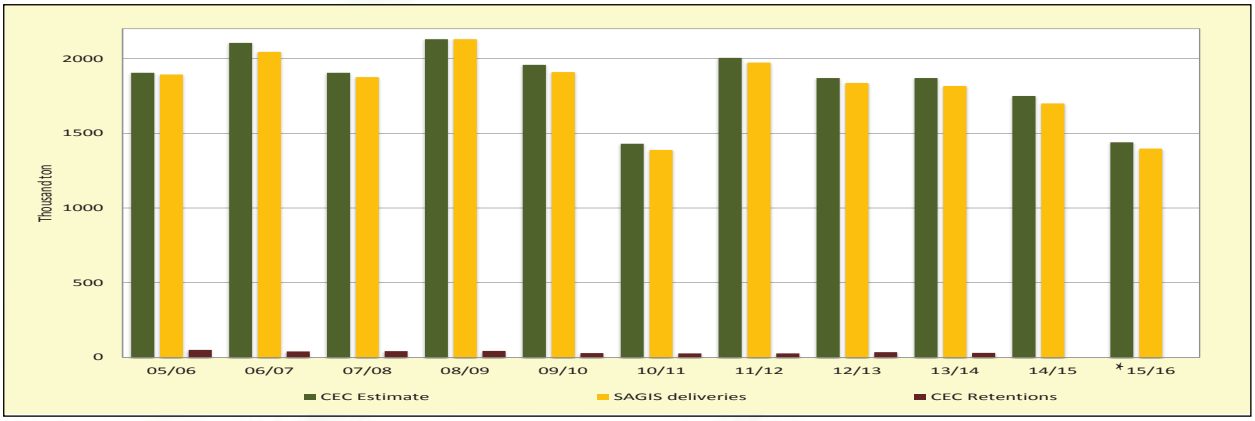
Graph 6: Wheat supply and demand overview 2015/2016 season (Oct - Jul)



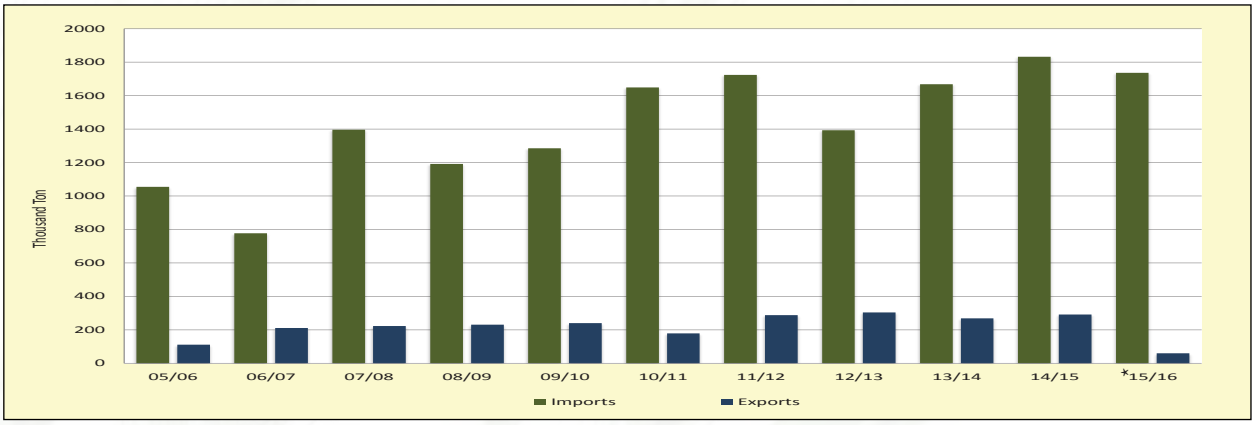
Figures provided by SAGIS, (Publication date: 2016-08-24)

WHEAT: SUPPLY AND DEMAND TABLE BASED ON SAGIS' INFO													Publication date: 2016-08-24						
	Season (Oct - Sep)																	Current Season Oct - Jul	10 YEAR AVERAGE 2005/6-2014/15
	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	
																		10	
CEC	1 531 000	1 725 000	2 349 000	2 493 000	2 321 000	1 540 000	1 680 000	1 905 000	2 105 000	1 905 000	2 130 000	1 958 000	1 430 000	2 005 000	1 870 000	1 870 000	1 750 000	1 440 000	1 705 800
CEC (Retention)					33 000	40 000	38 000	50 000	40 000	42 000	43 000	29 000	27 000	26 500	35 000	30 000	0	0	29 250
SUPPLY																			
Opening stock (1 Oct)	1 241 000	771 000	507 000	551 000	580 000	897 000	598 000	574 000	582 000	376 000	509 000	694 000	579 000	478 000	651 180	489 253	488 526	596 823	493 171
Prod deliveries	1 644 000	1 725 000	2 353 000	2 415 000	2 387 000	1 512 000	1 670 000	1 893 000	2 045 000	1 876 000	2 130 000	1 910 000	1 389 000	1 973 000	1 837 137	1 816 981	1 699 546	1 397 572	1 675 268
Imports	484 000	624 000	308 000	407 000	747 000	1 042 000	1 227 000	1 055 000	777 000	1 396 000	1 192 000	1 285 000	1 649 000	1 724 000	1 393 215	1 668 412	1 832 441	1 736 010	1 230 366
Surplus	0	0	0	0	0	6 000	6 000	9 000	32 000	0	13 000	0	23 000	14 000	0	0	15 151	6 046	10 615
Total supply	3 369 000	3 120 000	3 168 000	3 373 000	3 714 000	3 457 000	3 501 000	3 531 000	3 436 000	3 648 000	3 844 000	3 889 000	3 640 000	4 189 000	3 881 532	3 974 646	4 035 664	3 736 451	3 409 420
DEMAND																			
Processed	2 400 000	2 371 000	2 427 000	2 541 000	2 577 000	2 653 000	2 736 000	2 793 000	2 820 000	2 845 000	2 857 000	3 017 000	2 945 000	3 202 000	3 040 086	3 175 834	3 112 718	2 580 681	2 663 180
-human	2 348 000	2 345 000	2 424 000	2 519 000	2 575 000	2 652 000	2 734 000	2 781 000	2 818 000	2 844 000	2 849 000	2 991 000	2 944 000	3 066 000	3 008 378	3 122 134	3 109 022	2 578 673	2 641 040
-animal	52 000	24 000	2 000	22 000	2 000	1 000	2 000	12 000	2 000	1 000	8 000	26 000	1 000	136 000	31 694	53 695	3 696	2 008	22 139
-gristing	0	2 000	1 000	0	0	0	0	0	0	0	0	0	0	0	14	5	0	0	1
-bio-fuel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Withdrawn by producers	0	43 000	33 000	31 000	24 000	13 000	7 000	10 000	7 000	12 000	12 000	14 000	6 000	4 000	3 934	3 127	1 320	1 760	7 025
Released to end-consumers	5 000	12 000	4 000	7 000	5 000	2 000	2 000	4 000	4 000	2 000	5 000	3 000	6 000	7 000	7 322	3 095	2 802	1 735	4 112
Seed for planting purposes	16 000	26 000	24 000	27 000	20 000	21 000	18 000	26 000	17 000	22 000	26 000	17 000	13 000	18 000	15 998	18 198	22 705	18 647	17 770
Net receipts(-)/disp(+)	76 000	37 000	9 000	15 000	11 000	12 000	6 000	5 000	1 000	26 000	19 000	15 000	13 000	19 000	19 990	16 172	7 468	9 600	12 546
Deficit	60 000	52 000	17 000	23 000	1 000	0	0	0	0	9 000	0	4 000	0	0	713	1 243	0	0	1 371
Exports	75 000	72 000	103 000	149 000	179 000	158 000	158 000	111 000	211 000	223 000	231 000	240 000	179 000	288 000	304 236	268 451	291 828	60 045	207 906
Total Demand	2 632 000	2 613 000	2 617 000	2 793 000	2 817 000	2 859 000	2 927 000	2 949 000	3 060 000	3 139 000	3 150 000	3 310 000	3 162 000	3 538 000	3 392 279	3 486 120	3 438 841	2 672 468	2 913 912
STOCK POSITION																			
Ending Stock (30 Sep)	737 000	507 000	551 000	580 000	897 000	598 000	574 000	582 000	376 000	509 000	694 000	579 000	478 000	651 000	489 253	488 526	596 823	1 063 983	495 508
- processed p/month	200 000	197 600	202 300	211 800	214 800	221 100	228 000	232 800	235 000	237 100	238 100	251 400	245 400	266 800	253 341	264 653	259 393	258 068	221 933
- months' stock	3.7	2.6	2.7	2.7	4.2	2.7	2.5	2.5	1.6	2.1	2.9	2.3	1.9	2.4	1.9	1.8	1.8	4.1	2
Note: ***Figures for current season up to date																			

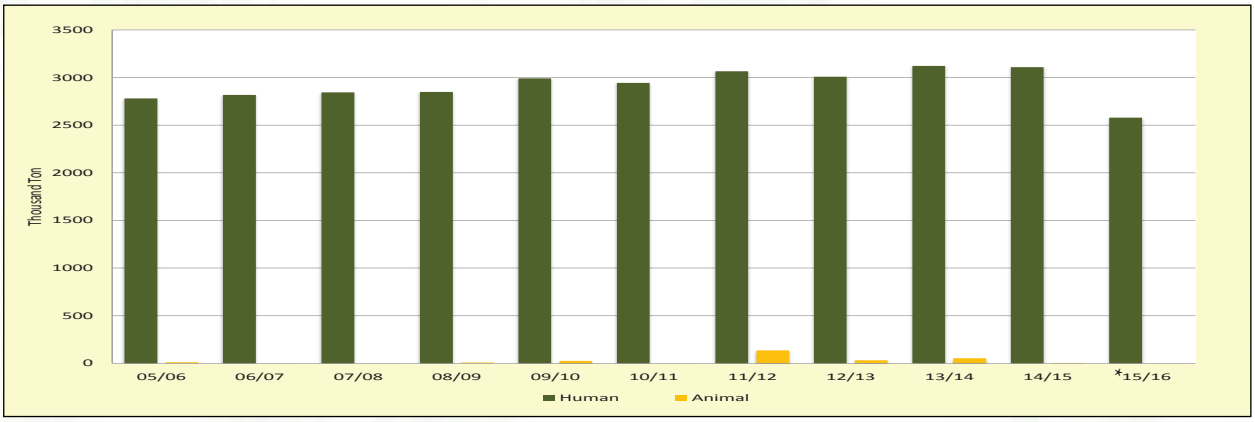
Graph 7: Wheat: CEC Estimate, Retentions and SAGIS deliveries over seasons



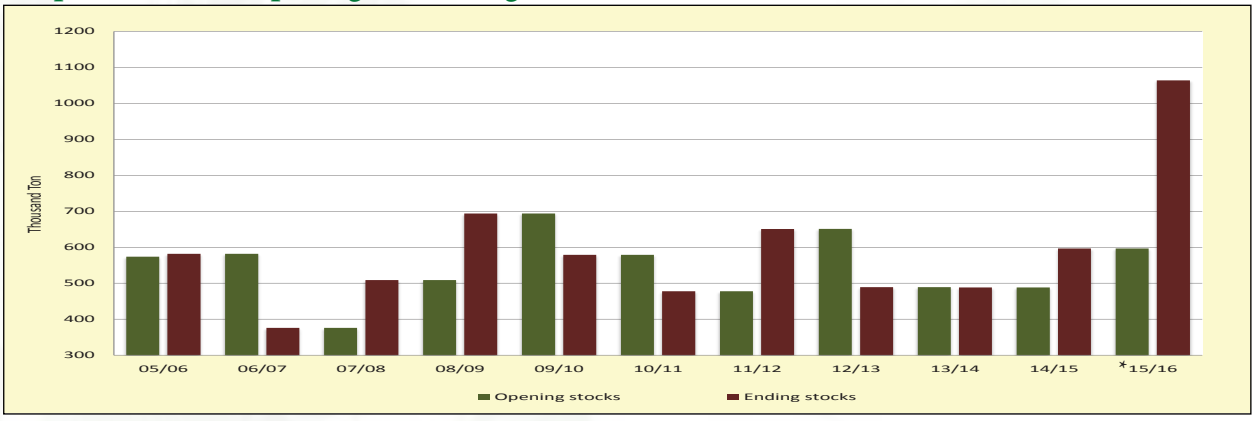
Graph 8: Wheat: Imports and exports over seasons



Graph 9: Wheat: RSA consumption over seasons



Graph 10: Wheat: Opening and ending stocks over seasons



Figures provided by SAGIS, *15/16 figures (Oct - Jul)

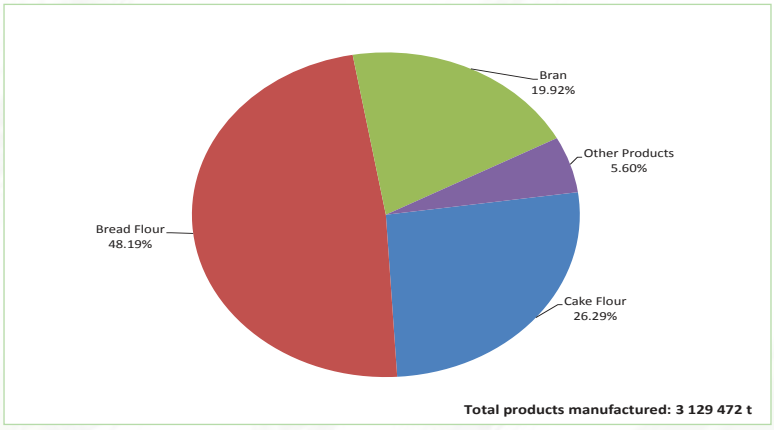
Wheat Product Information

On 14 November 2014, the Minister of Agriculture, Forestry & Fisheries announced new statutory measures for the manufacturing of maize & wheaten products.

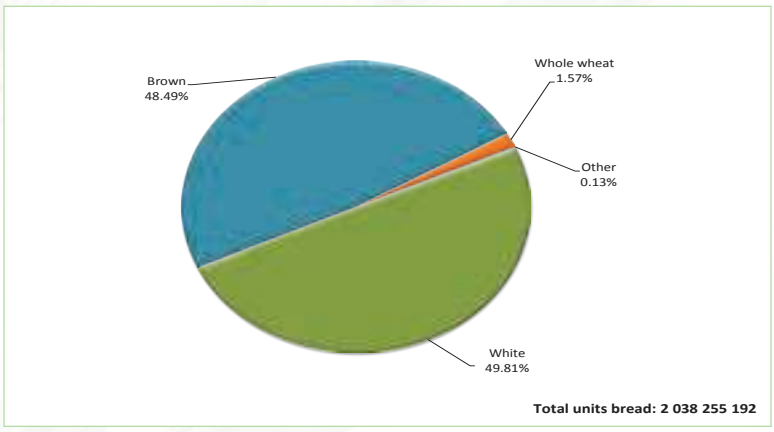
To comply with the abovementioned statutory measures, manufacturers of these products have to register with SAGIS and submit information with regards to the manufacture, import and export of wheat products, as well as the manufacture of pan baked products.

Please see graphs 11 to 13 below as well as the tables on pages 9 and 10 for wheat product and pan baked product figures received by SAGIS from 11 October 2015 to 13 July 2016.

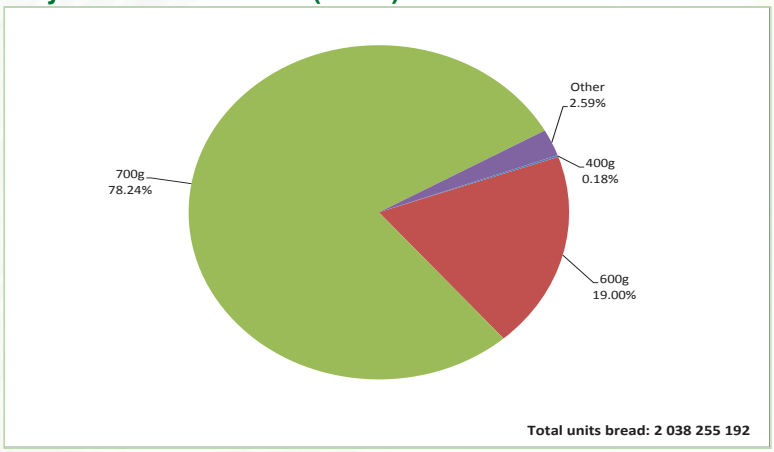
Graph 11: Wheat products manufactured from July 2015 - June 2016 (tons)



Graph 12: Pan baked bread per type from July 2015 - June 2016 (units)



Graph 13: Pan baked bread per mass July 2015 - June 2016 (units)



WHEAT PRODUCTS PER MONTH MANUFACTURED											
	Oct 2015 Manufactured Tons	Nov 2015 Manufactured Tons	Dec 2015 Manufactured Tons	Jan 2016 Manufactured Tons	Feb 2016 Manufactured Tons	Mar 2016 Manufactured Tons	Apr 2016 Manufactured Tons	May 2016 Manufactured Tons	Jun 2016 Manufactured Tons	Progressive: Jul 2015 - Jun 2016 Manufactured Tons	Jul 2016 Manufactured Tons
Cake Flour	73 263	74 624	65 626	65 217	62 008	63 492	59 307	63 807	69 808	822 760	72 497
Self-Raising Flour	1 203	2 001	1 659	1 239	733	1 064	822	1 383	1 668	16 300	1 137
White Bread Flour	90 106	94 195	93 104	88 622	90 503	93 730	92 500	94 888	95 707	1 110 787	90 351
Brown Bread Flour	30 418	30 235	30 386	30 052	30 096	36 202	31 850	35 225	39 280	394 497	33 985
Other Flour (Industrial)	13 382	14 037	9 358	10 050	10 764	10 403	11 632	12 336	11 117	142 650	12 133
Whole Wheat Meal	197	272	79	135	377	431	437	265	250	2 808	320
Bran	53 214	55 011	51 752	50 148	47 362	51 559	49 345	51 697	53 211	623 402	53 054
Semolina	811	914	1 438	1 799	1 485	1 575	1 312	1 285	1 751	16 268	406
Total	262 594	271 289	253 402	247 262	243 328	258 456	247 205	260 886	272 792	3 129 472	263 883

WHEAT PRODUCTS PER MONTH IMPORTED											
	Oct 2015 Imported Tons	Nov 2015 Imported Tons	Dec 2015 Imported Tons	Jan 2016 Imported Tons	Feb 2016 Imported Tons	Mar 2016 Imported Tons	Apr 2016 Imported Tons	May 2016 Imported Tons	Jun 2016 Imported Tons	Progressive: Jul 2015 - Jun 2016 Imported Tons	Jul 2016 Imported Tons
Cake Flour	0	0	0	0	40	0	0	0	0	40	0
Self-Raising Flour	0	0	0	0	0	0	0	0	0	0	0
White Bread Flour	140	700	0	0	0	0	0	0	0	928	0
Brown Bread Flour	0	0	0	0	40	0	0	0	0	40	0
Other Flour (Industrial)	0	0	0	84	0	0	0	0	0	649	0
Whole Wheat Meal	340	28	82	0	0	0	0	0	0	1 256	0
Bran	86	83	113	84	264	551	498	363	358	3 028	656
Semolina	0	0	0	0	0	0	0	0	0	0	0
Total	566	811	195	168	344	551	498	363	358	5 941	656

WHEAT PRODUCTS PER MONTH EXPORTED											
	Oct 2015 Exported Tons	Nov 2015 Exported Tons	Dec 2015 Exported Tons	Jan 2016 Exported Tons	Feb 2016 Exported Tons	Mar 2016 Exported Tons	Apr 2016 Exported Tons	May 2016 Exported Tons	Jun 2016 Exported Tons	Progressive: Jul 2015 - Jun 2016 Exported Tons	Jul 2016 Exported Tons
Cake Flour	153	258	307	206	62	172	116	284	148	3 134	122
Self-Raising Flour	0	0	0	0	0	0	0	0	0	0	0
White Bread Flour	748	746	1 073	493	1 810	739	582	294	158	8 089	737
Brown Bread Flour	265	182	171	112	205	63	8	144	164	2 063	172
Other Flour (Industrial)	329	404	240	116	134	204	107	105	255	1 906	10
Whole Wheat Meal	0	0	0	0	0	0	0	0	0	0	0
Bran	64	84	75	51	48	0	9	30	32	1 020	0
Semolina	0	0	0	0	0	0	0	0	0	0	0
Total	1 559	1 674	1 866	978	2 259	1 178	822	857	757	16 212	1 041

PAN BAKED PRODUCTS PER MONTH MANUFACTURED											
	Oct 2015 Manufactured	Nov 2015 Manufactured	Dec 2015 Manufactured	Jan 2016 Manufactured	Feb 2016 Manufactured	Mar 2016 Manufactured	Apr 2016 Manufactured	May 2016 Manufactured	Jun 2016 Manufactured	Progressive: Jul 2015 - Jun 2016 Manufactured	Jul 2016 Manufactured
WHITE BREAD											
400g (Units)	148 273	211 958	227 685	199 971	77 402	212 914	222 362	229 484	241 564	2 325 993	234 291
600g (Units)	15 578 121	14 597 640	15 686 258	14 694 973	14 158 449	15 679 522	14 858 277	14 805 675	15 864 154	182 799 175	16 653 473
700g (Units)	65 322 828	65 494 890	66 122 856	69 834 576	64 820 897	76 143 664	65 031 077	68 467 007	71 574 657	821 458 982	74 699 045
Other (Units)	726 471	615 136	592 712	735 031	577 836	813 694	744 962	938 228	917 879	8 761 165	960 422
White Bread (Total Units)	**81 775 693**	**80 919 624**	**82 629 511**	**85 464 551**	**79 634 584**	**92 849 794**	**80 856 678**	**84 440 394**	**88 598 254**	**1 015 345 315**	**92 547 231**
BROWN BREAD											
400g (Units)	135 512	78 292	75 588	68 614	68 622	75 302	95 917	104 210	107 006	1 147 425	77 799
600g (Units)	17 252 849	16 242 452	15 953 992	16 766 695	15 408 619	17 387 747	17 735 903	17 799 964	19 455 171	203 695 863	19 227 376
700g (Units)	60 740 513	60 721 303	60 625 135	63 957 678	60 009 742	69 943 507	61 885 232	64 519 886	68 738 432	764 033 297	70 187 801
Other (Units)	1 629 078	1 719 687	1 473 218	1 744 431	1 491 933	1 810 318	1 593 323	1 536 749	1 550 440	19 504 007	1 710 580
Brown Bread (Total Units)	**79 757 952**	**78 761 734**	**78 127 933**	**82 537 418**	**76 978 916**	**89 216 874**	**81 310 375**	**83 960 809**	**89 851 049**	**988 380 592**	**91 203 556**
WHOLE WHEAT											
400g (Units)	1 268	1 536	1 764	1 791	1 670	2 350	2 061	2 176	7 367	25 653	2 730
600g (Units)	37 197	35 267	36 864	30 576	33 668	44 699	39 237	35 335	72 443	493 452	40 919
700g (Units)	671 382	659 255	625 084	729 798	664 644	820 188	583 458	720 515	804 920	8 617 592	816 126
Other (Units)	1 916 746	1 893 611	1 752 004	1 908 069	1 785 514	2 040 066	1 720 242	1 920 361	1 908 113	22 766 986	1 969 981
Whole Wheat (Total Units)	**2 626 593**	**2 589 669**	**2 415 716**	**2 670 234**	**2 485 496**	**2 907 303**	**2 344 998**	**2 678 387**	**2 792 843**	**31 903 683**	**2 829 756**
OTHER											
400g (Units)	8 055	9 217	8 345	6 188	5 781	6 135	6 799	6 609	9 500	84 411	7 445
600g (Units)	26 337	26 968	28 877	29 610	25 690	30 850	28 328	28 385	24 907	310 800	33 597
700g (Units)	53 447	51 300	44 038	52 124	48 547	47 724	46 952	48 776	52 761	570 748	52 863
Other (Units)	51 871	42 613	94 545	71 056	185 258	203 485	300 910	222 566	326 591	1 659 643	279 643
Other (Total Units)	**139 710**	**130 098**	**175 805**	**158 978**	**265 276**	**288 194**	**382 989**	**306 336**	**413 759**	**2 625 602**	**373 548**
Total	**164 299 948**	**162 401 125**	**163 348 965**	**170 831 181**	**159 364 272**	**185 262 165**	**164 895 040**	**171 385 926**	**181 655 905**	**2 038 255 192**	**186 954 091**

Assuring the quality of South African wheat

South Africa has three major wheat-breeding programs. New or introduction cultivars can only be released for planting if it has better agronomical as well as better flour quality characteristics than the cultivars planted commercially in a specific area.

The classification 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, millers and bakers to ensure market-directed and quality-driven wheat production in the interest of wheat producers and processors.

Classification norms use cultivars as biological quality standards as 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 of wheat with the suitable quality characteristics is a long-term project, classification norms and quality standards are provided to breeders in an attempt to provide them with guidelines that should stand the test of time. Changing the classification 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.

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

Wheat grades

The 252 representative crop samples were graded as follows: 49% was graded B1, 22% was graded B2, 7% was graded B3, 4% was graded B4, 16% UT (Utility Grade) and 2% COW (Class Other Wheat). The majority of the samples (74%) downgraded to Utility Grade was as a result of the percentage of either screenings or other grain and unthreshed ears exceeding the maximum allowable level for grades B1 to B4. Most of these downgraded samples originated from the Western Cape.

Grade B1 wheat in the Free State province amounted to 52% (48% in the previous season). In the Irrigation areas 60% (46% in the previous season) of the wheat graded as B1 and in the Western Cape Province 37% graded as B1 (8% in the previous season). The increase in the number of samples graded B1 this season, can be attributed to the increase in protein levels observed over all of the wheat production areas, especially the Western Cape.

Table 2: Bread Wheat Grading Table

Grade	Minimum			*Maximum percentage permissible deviation (m/m)*									
				A	B	C	D	E	F	G	H	I	J
	Hectolitre mass, kg/hl	Falling number, seconds	Protein content, %	Heavily frost damaged kernels	Field fungi	Storage fungi	Screenings	Other grain and unthreshed ears	Gravel, stones, turf and glass	Foreign matter plus F	Heat damaged kernels	Damaged kernels plus H	Combined deviations (D+E+G+I)
Grade 1	77	220	12	5	2	0.5	3	1	0.5	1	0.5	2	5
Grade 2	76	220	11	5	2	0.5	3	1	0.5	1	0.5	2	5
Grade 3	74	220	10	5	2	0.5	3	1	0.5	1	0.5	2	5
Grade 4	72	200	9	5	2	0.5	4	1	0.5	1	0.5	2	5
Utility grade	70	150	8	10	2	0.5	10	4	0.5	3	0.5	5	10
Other Wheat	<70	<150	<8	>10	>2	>0.5	>10	>4	>0.5	>3	>0.5	>5	>10
Minimum size of working samples	1 kg	300 g clean	Apparatus instructions	25 g sifted	25 g sifted	25 g sifted	500 g unsifted	50 g sifted	100 g sifted	100 g sifted	100 g sifted	25 g sifted	-

Government Notice No. R. 64 of 29 January 2016.

WHEAT SEED SOLD BY COMMERCIAL GRAIN SILO OWNERS TO WHEAT PRODUCERS FOR THE 2015 PLANTING SEASON

Cultivar	%	Cultivar	%
SST 056	23.13	SST 316	0.341
SST 087	18.46	PAN 3368	0.337
SST 0127	9.22	SST 822	0.299
SST 015	8.50	PAN 3400	0.267
SST 88	7.09	PAN 3161	0.255
SST 884	6.66	PAN 3497	0.251
SST 027	4.84	SST 317	0.191
SST 843	3.43	Duzi	0.180
SST 835	3.11	SST 374	0.145
SST 895	2.00	PAN 3379	0.118
SST 875	1.97	PAN 3195	0.095
SST 806	1.95	PAN 3120	0.072
SST 347	1.21	SST 867	0.048
SST 877	1.023	Ratel	0.045
SST 356	1.020	Kwartel	0.022
SST 876	0.858	SST 387	0.022
PAN 3471	0.794	Krokodil	0.017
Matlabas	0.512	SST 0117	0.017
Elands	0.511	Kariega	0.005
SST 866	0.502	Koonap	0.001
PAN 3408	0.467	Senqu	0.001
			100

Note: These figures are not absolute, but the best and only figures available.

Most popular cultivars according to cultivar identification

Farmers in the Western Cape preferred SST 88 (29.2%), SST 087 (26.6%) and SST 015 (21.9%). SST 056 (13.2%) and SST 027 (8.3%) were also popular cultivars.

In the Vaal and Orange River areas SST 884 (32.4%) dominated the market. PAN 3471 (16.8%), SST 835 (15.3%), SST 875 (12.1%) and SST 843 (7.3%) were popular cultivars also.

The most preferred cultivars in the North West was SST 843 (28.7%) and SST 884 (21.0%), followed by SST 875 (6.6%), PAN 3471 (6.5%) and SST 087 (6.0%).

In regions 21 to 24 of the Free State the preferred cultivars were SST 884 (13.0%), SST 875 (12.2%), SST 835 (12.0%), PAN 3471 (10.5%) and PAN 3120 (5.2%). Elands was the most planted cultivar in regions 25 to 28 and represented 18.2%. PAN 3161 (12.3%), SST 875 (10.9%), SST 356 (9.0%) and SST 835 (8.7%) were also popular cultivars.

In Mpumalanga, Gauteng, Limpopo and KwaZulu-Natal, SST 884 (35.5%) was the dominant cultivar, followed by SST 835 (21.1%), SST 875 (18.7%), SST 843 (8.8%) and Duzi (6.4%).

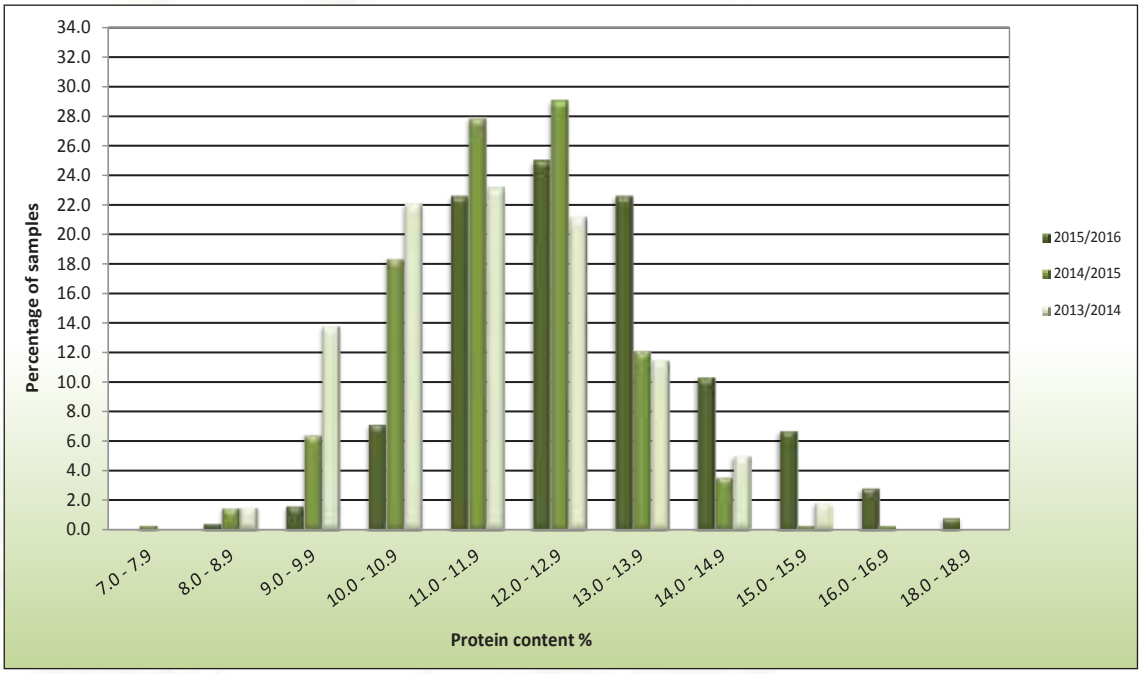
The above mentioned percentages are weighted averages based on the top five cultivars per region provided on pages 32 to 56. The top five cultivars per region were calculated from the cultivar identification done on each of the 252 crop samples.

Crop quality of the 2015/2016 season

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

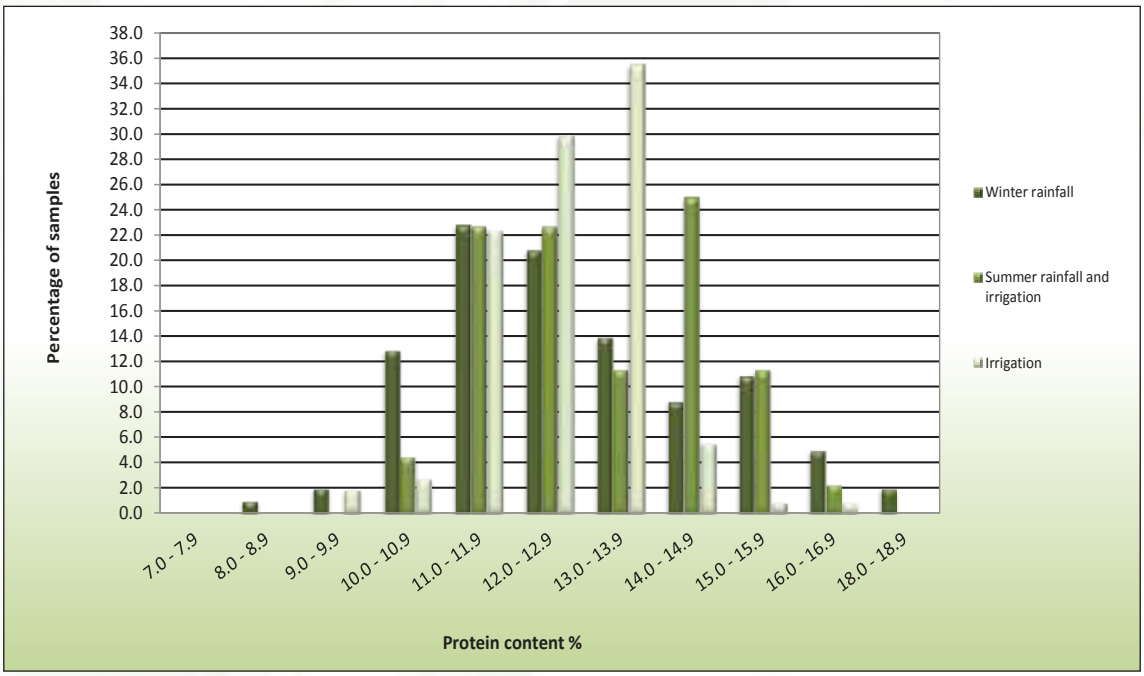
The national whole wheat protein average of 12.8% is the highest since the 2004/2005 season and can be attributed to the drought conditions experienced this season. Protein content is generally a function of the environment (soil and climatic conditions) where the wheat was grown as well as fertilizer treatment. The percentage of samples having protein contents exceeding 13.0%, increased significantly from 16.4% and 18.3% in the previous two seasons respectively, to 43.2% this season.

Graph 14: Protein content distribution over the last three seasons



Contrary to normal expectations, the Winter rainfall areas (12.8 %) did not have the lowest whole wheat protein average this season. This position was taken by the Irrigation areas, with an average of 12.6%. The production regions in the Free State province, as in previous seasons reported the highest average protein content of 13.2%.

Graph 15: Protein content distribution between the three production areas



Flour protein content is on average 0.5 to 1.2% lower than that of whole wheat and averaged 11.8% this season. The protein loss 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 increased by 0.9 kg/hl to 81.1 kg/hl compared to the previous season and was also higher than the six year weighted average of 80.5 kg/hl for determinations done by means of the Kern 222 instrument. Of the 21 samples that reported values below the 77 kg/hl minimum level for grade B1 wheat, 12 originated in the Western Cape (Winter rainfall area), 5 in the North West, 3 in the Free State and one in Limpopo. The regional averages ranged from 79.7 kg/hl in the Winter rainfall areas to 82.6 in the Irrigation areas.

The thousand kernel mass, reported on a 13% moisture basis decreased further, from 39.3 g in the 2013/2014 season to 38.8 g last season to 36.8 g this season. Averages over production areas varied from 34.8 g in the Free State to 37.9 g in the Irrigation areas. The weighted average percentage screenings (1.8 mm sieve) of 1.71% was higher than the 1.55% and 1.58% of the previous two seasons. The Winter rainfall areas reported the highest average percentage, namely 1.86% and the Irrigation areas the lowest of 1.43%.

The weighted average falling number was 393 seconds, the highest average value of the past eighteen seasons. As a result, none of the samples analysed for this survey reported falling number values below 250 seconds. The highest average falling number value of 405 seconds, was reported for the Irrigation areas. All falling number values reported are corrected for the altitude at which the test is performed. During the previous two seasons four and 29 samples respectively reported falling numbers below 250 seconds.

The weighted mixogram peak time on flour milled on the Quadromat Junior mill averaged 2.7 minutes, shorter than the 3.0 minutes of the previous two seasons as well as the ten year average (2.9 minutes). The weighted mixogram peak time of the flour from the Bühler mill was 2.6 minutes, comparing well with the 2.7 minutes last season. Mixing time, in general, decreases as protein content increases to about 12.0%, thereafter remaining approximately constant with flour protein increases.

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 labortory scale mill at SAGL is set to 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 70 composite samples was 73.4%, equal to the previous season.

The average Kent Jones colour this season was -3.5 KJ units, slightly lower than the previous season. As from the 2012/2013 survey, a dry colour determination by means of a Konica Minolta CM-5 spectrophotometer is also included. Please see the comparison of the CIE L*a*b* values obtained below. The average and range (in brackets) are provided to assist with interpretation of these parameters:
2015/2016 season: L* 93.78 (92.99 – 94.40), a* 0.47 (0.06 – 0.59) and b* 9.75 (8.51 – 11.39)
2014/2015 season: L* 93.77 (92.98 – 94.30), a* 0.44 (0.22 – 0.59) and b* 9.72 (8.21 – 11.11)
2013/2014 season: L* 93.99 (93.11 – 94.59), a* 0.40 (0.29 – 0.57) and b* 9.50 (8.49 – 10.63)
2012/2013 season: L* 93.85 (93.14 – 94.39), a* 0.41 (0.26 – 0.54) and b* 9.92 (8.65 – 11.35).
L* represents lightness (100 being white and 0 being black), a* represents green to red variation and b* represents variation from blue to yellow.

This is the second survey that the ash content is determined on the composite samples. The average ash content was determined to be 0.65 % on a dry basis (moisture free basis), compared to the 0.59% of the previous season. According to the Wheat product regulations (Government Notice No. R. 186 of 22 February 2008), cake flour's ash content should not exceed 0.60% and white bread flour's should be between 0.60 to 1.00%.

This is the third survey that include Rapid Visco Analyser (RVA) analyses on the composite samples. The average peak viscosity of the samples analysed was 2318 cP (centipoise), the minimum viscosity 1709 cP and the final viscosity 2597 cP. Last season the values were 2246 cP, 1719 cP and 2550 cP respectively. The analysis conditions were kept constant during all of the analyses.

The wet gluten (14% mb) averaged 31.9% and the dry gluten also on a 14% moisture basis, 11.0%. These values are higher than the 28.9% and 9.8% respectively of the previous season. This observation is expected taking the higher protein contents into account. The average gluten index value was 95, ranging between 84 and 99. 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 average gluten index value last season was 88.

The farinograph analysis had an average water absorption of 60.8% (59.5% the previous season) and an average development time of 5.8 minutes (5.3 minutes the previous season). The stability value of 8.0 minutes compared well with the 8.3 minutes reported previously. There was also no significant difference between the mixing tolerance indexes of these two seasons, namely 38 BU and 35 BU respectively.

The average alveogram strength was 38.3 cm^2 and the average P/L value 0.75 (38.1 cm^2 and 0.59 the previous season). The distensibility of the dough reported on the Alveograph was shorter than during the 2014/2015 season. A combination of this and also a slightly higher stability value resulted in the observed increase in P/L value.

The average extensogram strength was 105 cm^2 (98 cm^2 previous season). The maximum height in Brabender Units did not increase significantly compared to the previous season (373 BU in 2014/2015 and 360 BU in 2014/2015). The extensibility values were similar, 198 mm now and 196 mm previously.

The 100 g loaves baked using the straight-dough optimized bread making method, received an evaluation rated as "Excellent". The basis for this evaluation refers to the relationship between the protein content and the bread volume.

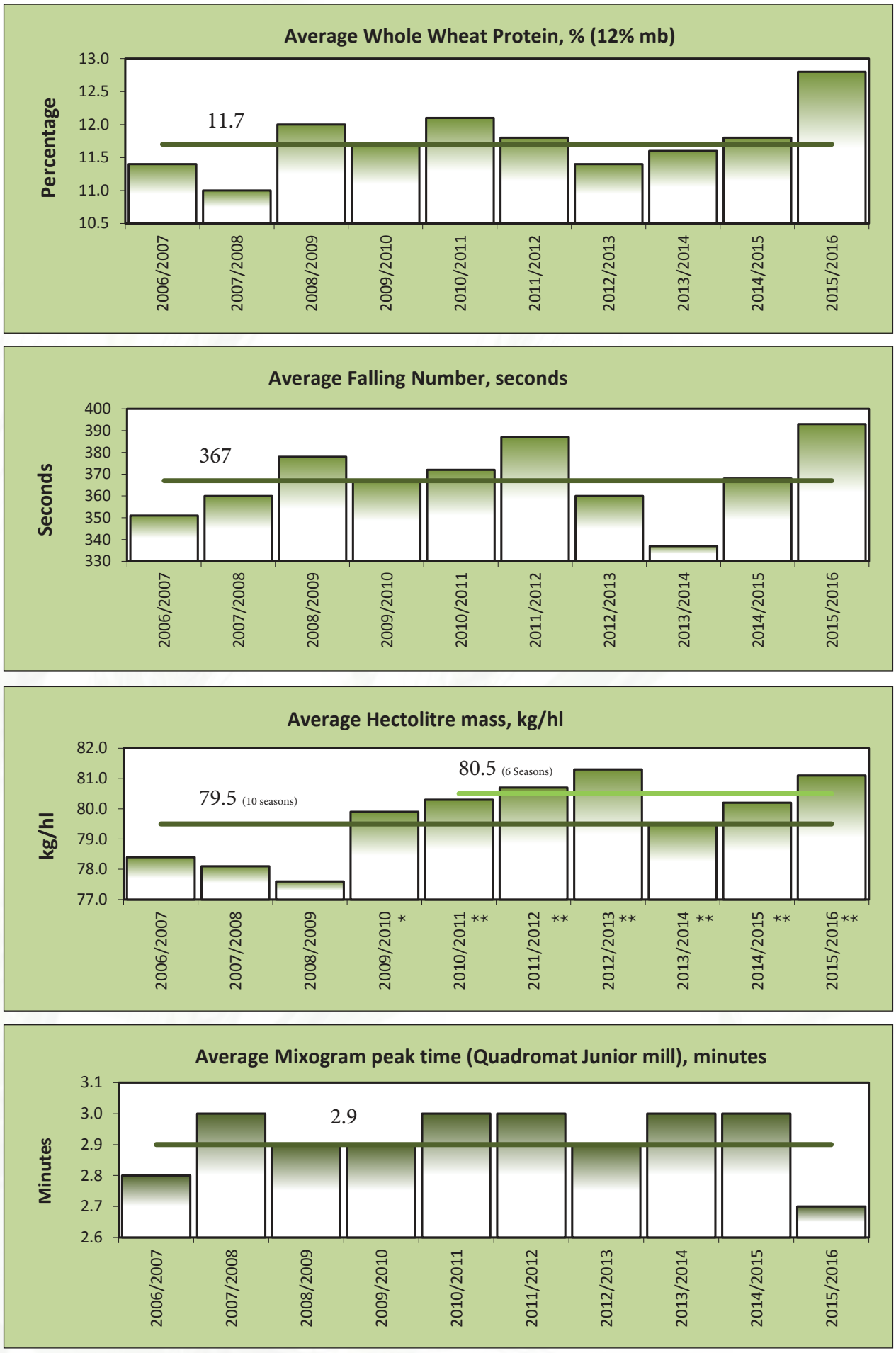
Forty samples, randomly selected to represent different regions as well as classes and grades, were tested by means of a SANAS ISO/IEC 17025 accredited multi-mycotoxin screening method using UPLC-MS/MS. With this technique simultaneous quantification and confirmation of Aflatoxin G_1; B_1; G_2; B_2, Fumonisin B_1; B_2; B_3, Deoxynivalenol, 15-ADON, HT-2 Toxin, T-2 Toxin, Zearalenone and Ochratoxin A are possible in one run.

Four samples tested positive for deoxynivalenol (DON) residues. The average value of the four positive results was 397 µg/kg (ppb) and the highest value obtained 593 µg/kg, which is still well below national and international maximum residue levels. Please see the mycotoxin results on pages 60 - 61. Last season, five samples tested positive for DON residues with an average value of 229 µg/kg (ppb), the highest value obtained was 361 µg/kg.

Table 3: Weighted average results for the last three seasons

	2015/2016					2014/2015					2013/2014				
Region	**Protein (12% mb), %**	**FN, sec**	**Hlm, kg/hl**	**Mixo PT, min**	***n***	**Protein (12% mb), %**	**FN, sec**	**Hlm, kg/hl**	**Mixo PT, min**	***n***	**Protein (12% mb), %**	**FN, sec**	**Hlm, kg/hl**	**Mixo PT, min**	***n***
1	-	-	-	-	-	11.4	310	78.5	2.9	*4*	10.9	369	78.8	2.9	*4*
2	15.0	397	77.1	2.6	*10*	11.0	401	77.0	3.2	*14*	10.5	355	78.5	3.2	*20*
3	14.4	402	78.6	2.7	*33*	11.2	380	79.9	2.6	*51*	10.5	361	78.6	2.9	*55*
4	12.4	379	80.5	2.8	*15*	10.7	388	81.3	2.6	*31*	10.6	331	77.8	3.0	*31*
5	11.1	377	81.0	2.5	*23*	11.3	381	79.0	2.8	*17*	10.9	300	79.2	2.6	*23*
6	11.3	357	80.7	2.4	*20*	11.1	360	80.2	2.4	*19*	11.2	325	79.4	2.5	*12*
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	12.8	378	84.0	2.3	*24*	12.1	380	80.9	2.8	*23*	11.5	382	81.8	2.8	*19*
11	12.5	408	83.2	2.5	*7*	11.9	364	82.3	2.9	*12*	12.4	375	81.0	2.5	*14*
12	13.2	409	82.0	3.0	*8*	12.9	373	81.4	3.7	*4*	12.2	357	80.8	3.1	*6*
13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	12.2	428	79.4	3.0	*11*	12.8	373	83.0	3.0	*4*	12.0	368	82.2	3.2	*2*
15	12.6	410	83.6	2.4	*4*	-	-	-	-	-	-	-	-	-	-
16	11.5	540	83.8	3.0	*1*	-	-	-	-	-	-	-	-	-	-
17	-	-	-	-	-	11.9	387	83.1	3.4	*2*	12.1	257	78.3	3.0	*8*
18	13.1	430	82.5	2.4	*1*	14.3	376	79.9	4.0	*2*	11.8	340	79.0	3.1	*2*
19	11.8	402	81.1	3.0	*13*	12.8	386	82.9	3.6	*2*	12.3	319	79.1	3.4	*11*
20	12.3	425	83.8	3.3	*8*	12.1	369	80.0	3.5	*15*	11.4	379	81.8	3.2	*7*
21	13.0	460	78.7	3.8	*1*	12.3	324	73.0	3.3	*1*	-	-	-	-	-
22	12.7	409	83.2	2.4	*2*	13.4	363	77.9	3.0	*3*	11.8	377	79.7	3.5	*3*
23	13.7	409	78.6	3.2	*8*	13.3	333	78.1	3.2	*15*	14.0	295	77.1	3.2	*13*
24	12.3	398	81.3	2.6	*11*	12.4	366	79.4	3.2	*21*	12.7	373	80.3	2.9	*13*
25	13.5	349	81.7	2.7	*9*	12.0	356	79.5	3.1	*19*	12.9	309	79.9	3.3	*12*
26	13.8	386	79.2	2.9	*2*	11.5	364	79.5	3.3	*6*	11.9	304	79.7	3.2	*7*
27	-	-	-	-	-	12.8	352	78.4	3.8	*3*	12.4	282	78.8	3.5	*2*
28	13.5	379	81.4	2.5	*11*	12.3	340	80.4	3.1	*15*	12.2	278	79.3	3.4	*26*
29	-	-	-	-	-	12.5	350	81.3	3.3	*1*	12.7	275	80.8	3.0	*1*
30	-	-	-	-	-	-	-	-	-	-	11.4	345	82.4	3.0	*2*
31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	13.4	401	80.6	2.8	*3*	12.7	282	79.7	3.3	*7*	12.8	307	80.5	2.7	*9*
33	12.5	391	85.4	3.0	*4*	11.5	408	81.5	3.1	*6*	12.5	278	80.3	3.0	*8*
34	13.2	399	81.4	2.7	*3*	11.8	338	81.5	3.6	*8*	11.5	353	81.4	2.8	*8*
35	12.1	401	82.3	3.1	*11*	11.6	374	81.4	3.5	*28*	12.0	384	81.7	3.4	*18*
36	13.6	429	84.0	2.9	9	12.3	354	82.2	2.8	4	12.0	391	83.3	2.6	4
Ave.	**12.8**	**393**	**81.1**	**2.7**	**252**	**11.8**	**368**	**80.2**	**3.0**	**337**	**11.6**	**337**	**79.5**	**3.0**	**340**

Graph 16: Weighted average quality over 10 seasons



* Includes addition of 2 kg/hl according to Hectolitre mass Dispensation.

** Hectolitre mass determined using Kern 222 instrument.

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

Flour Quality 2015/2016 season			
Flour protein (12% mb) (%)	11.8	Farinogram abs. (14% mb) (%)	60.8
Bread volume 100g (cm^3)	1047	Farinogram dev. time (min.)	5.8
Mixogram (Bühler) peak time (min)	2.6	Alveogram strength (cm^2)	38.3
Wet gluten (14% mb) (%)	31.9	Alveogram P/L	0.75
Dry gluten (14% mb) (%)	11.0	Extensogram strength (cm^2)	105

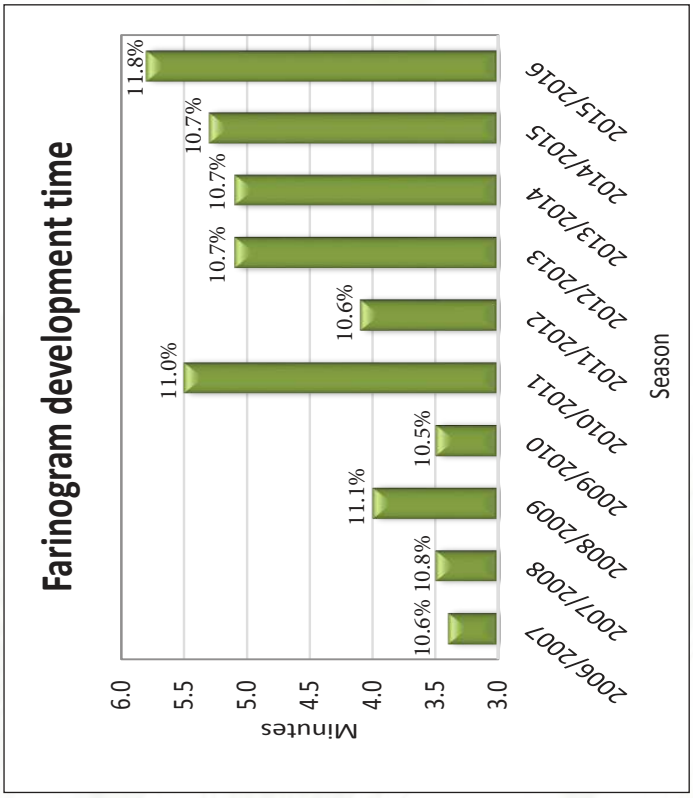
Flour Quality 2014/2015 season			
Flour protein (12% mb) (%)	10.7	Farinogram abs. (14% mb) (%)	59.5
Bread volume 100g (cm^3)	889	Farinogram dev. time (min.)	5.3
Mixogram (Bühler) peak time (min)	2.7	Alveogram strength (cm^2)	38.1
Wet gluten (14% mb) (%)	28.9	Alveogram P/L	0.59
Dry gluten (14% mb) (%)	9.8	Extensogram strength (cm^2)	98

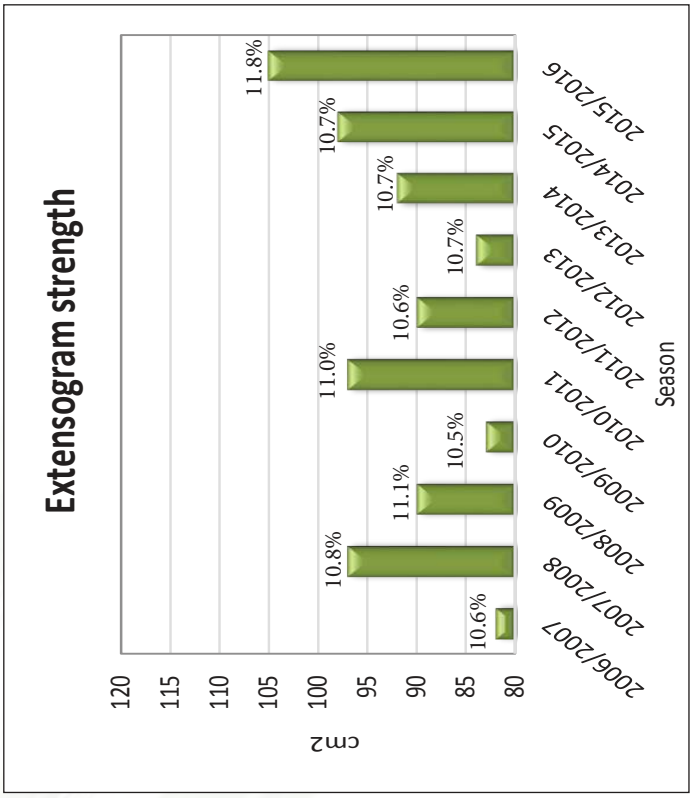
Flour Quality 2013/2014 season			
Flour protein (12% mb) (%)	10.7	Farinogram abs. (14% mb) (%)	60.1
Bread volume 100g (cm^3)	868	Farinogram dev. time (min.)	5.2
Mixogram (Bühler) peak time (min)	2.8	Alveogram strength (cm^2)	37.6
Wet gluten (14% mb) (%)	29.5	Alveogram P/L	0.74
Dry gluten (14% mb) (%)	10.4	Extensogram strength (cm^2)	92

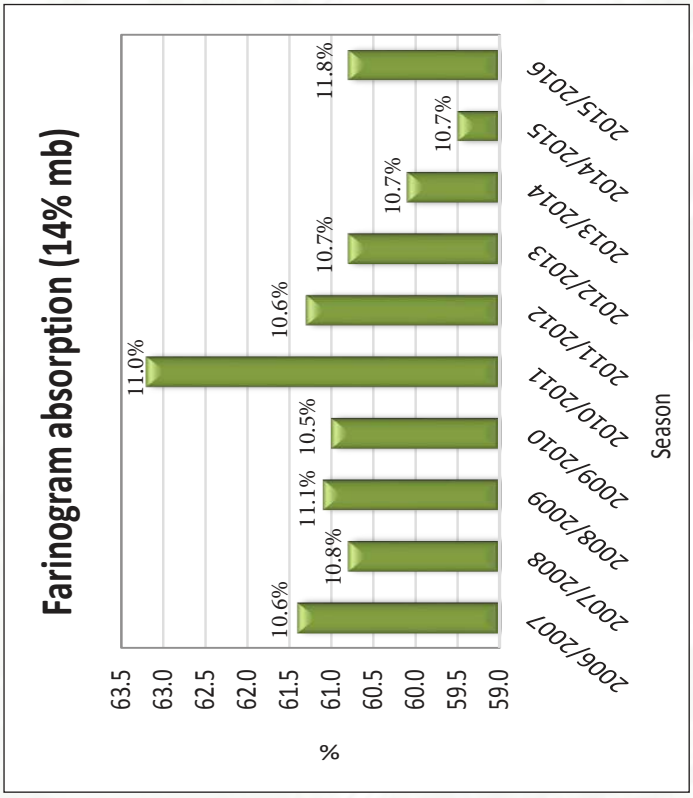
Flour Quality 2012/2013 season			
Flour protein (12% mb) (%)	10.7	Farinogram abs. (14% mb) (%)	60.8
Bread volume 100g (cm^3)	886	Farinogram dev. time (min.)	5.1
Mixogram (Bühler) peak time (min)	2.8	Alveogram strength (cm^2)	36.7
Wet gluten (14% mb) (%)	29.0	Alveogram P/L	0.96
Dry gluten (14% mb) (%)	10.0	Extensogram strength (cm^2)	84

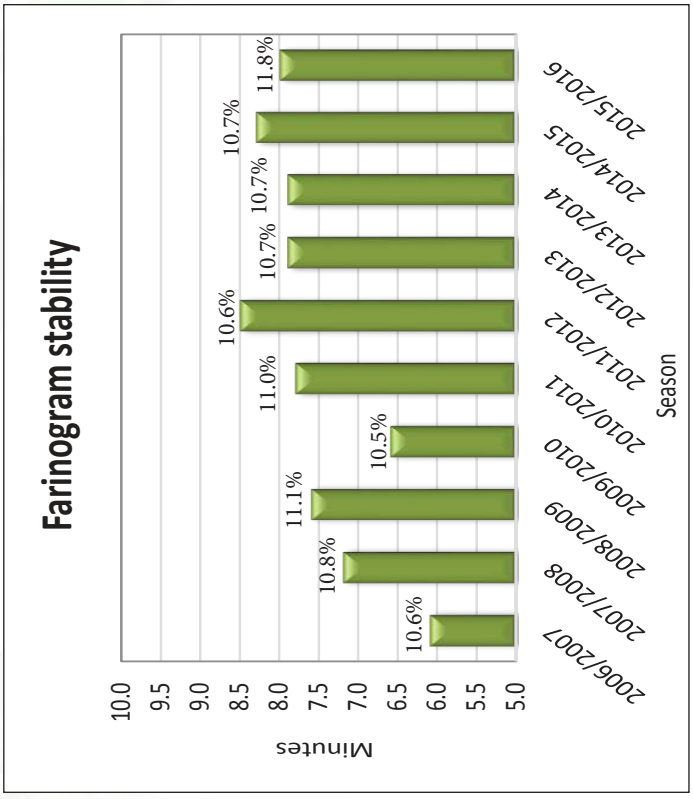
Graph 17: Comparison of rheological quality over seasons

(Flour protein content (12% mb) is indicated above each bar)



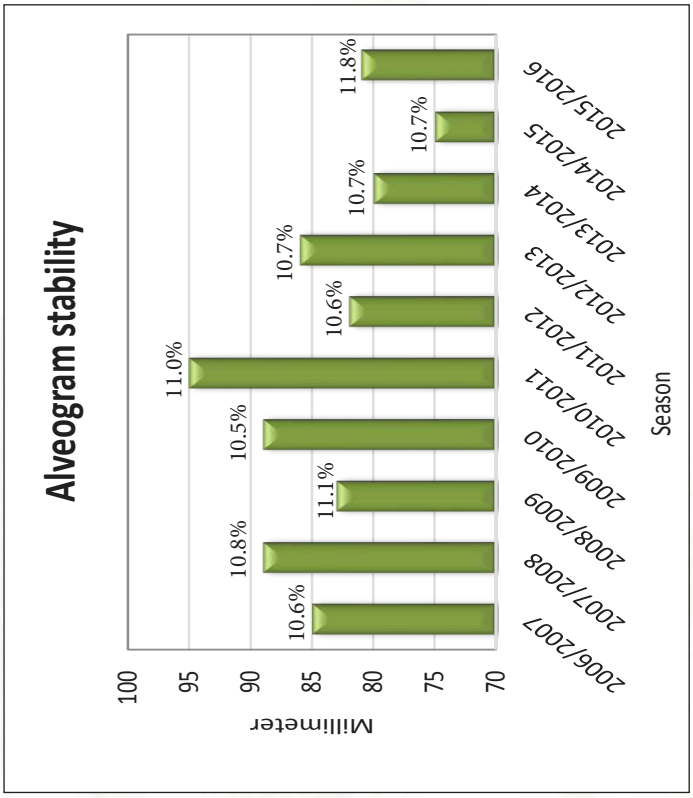


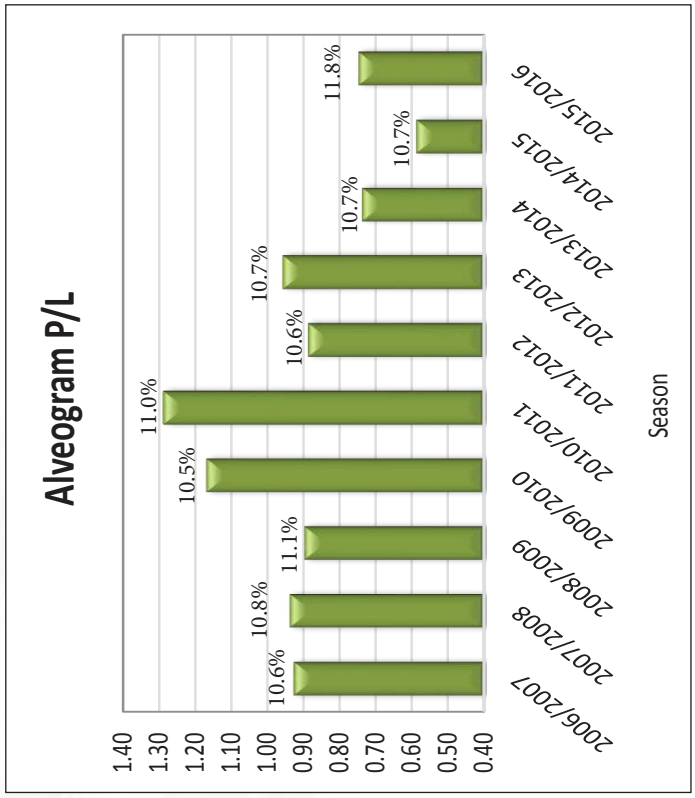


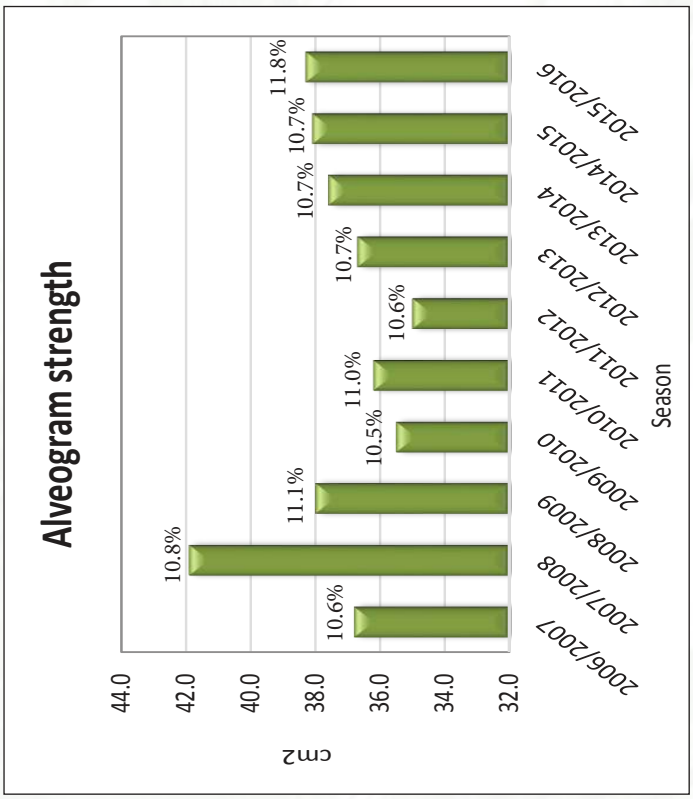


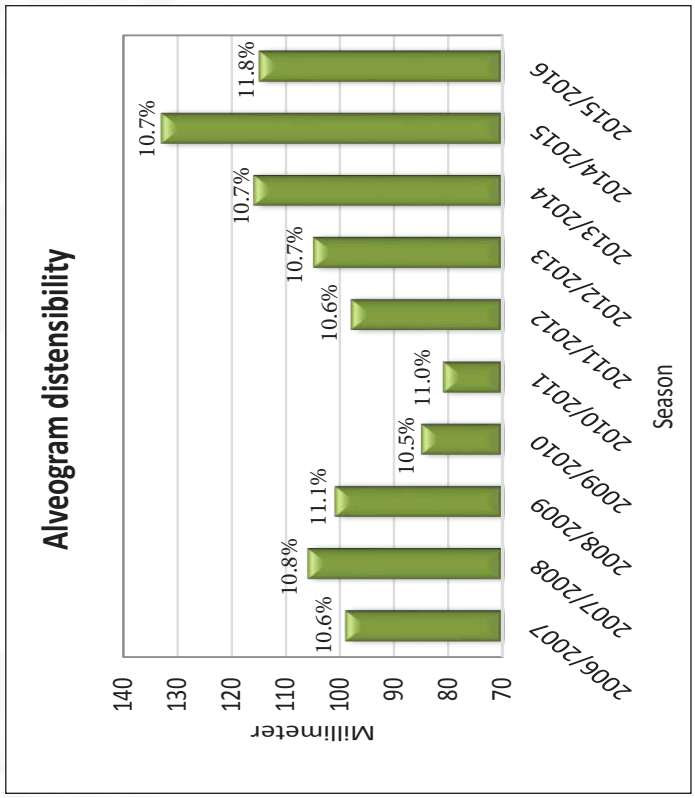
Graph 17: Comparison of rheological quality over seasons

(Flour protein content (12% mb) is indicated above each bar) (continue)









REGIONAL QUALITY SUMMARY

WINTER RAINFALL AREA
(Western Cape)

The Western Cape Province has a Mediterranean climate, characterized by cool, wet winters and hot dry summers. More than 80% of the rainfall is received in winter between April and September, making the Western Cape a predominantly winter rainfall area. The Swartland (on the west coast) and the Rûens (Southern Cape) are the main distinguishable geographic regions.

These two separate regions were divided into individual areas, amongst others according to their climatic, soil and geographic position. The Swartland region is divided into the following areas: Sandveld, Koringberg/Red Karoo, Middle Swartland and High Rainfall Area. The Rûens region is divided into 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.

The climatic conditions in the Swartland region were very challenging, as producers experienced the driest year in decades, leading to lower than average yields in most parts of the region. Planting conditions were also far from optimum, with no or very low moisture levels in the soil.

Climatic conditions in the Rûens region varied from wet to medium/dry soils during the planting period. Conditions improved during the season as a result of above normal rainfall in most parts of the region, leading to above average yields in many localities.

Wheat is generally planted from the second half of April until the middle of June and harvested during October to December.

The hectolitre mass averaged 79.7 kg/hl compared to the previous season's 79.8 kg/hl. The thousand kernel mass averaged 36.6 gram, 3.1 g lower than the previous season. The average falling number was 383 seconds. The average whole wheat protein content was 12.8% (12% mb), 11.1% in 2014/2015.

The percentage screenings of 1.86% was equal to the previous season's 1.85%, the highest of the three areas and 0.15% higher than the national average for 2015/2016. The mixogram peak time (Quadromat Junior mill) averaged 2.6 minutes, the shortest of the three major production areas. The Bühler extraction averaged 71.8% (average of wheat grades B1 to B4 and UT), 1% lower than 2014/2015. The average wet colour of the flour was -3.6 KJ units and the dry colour L* value (indicating lightness) 94.08. This colour indicates a white/light flour that is preferred by millers and bakers. Both these values compare with previous seasons. The average ash content was 0.63% (db).

The flour protein content averaged 11.8%. The average wet and dry gluten values namely 32.0% and 11.1% (14% mb) were respectively 4.7% and 1.8% higher than the previous season. The gluten index was 96. The average farinogram absorption was 60.2% and the development time 5.7 minutes, the stability averaged 8.8 minutes. The average alveogram strength was 36.7 cm^2, 3.6 cm^2 higher than last season. The alveogram P/L value was 0.63 compared to the 0.59 of 2014/2015. The average strength on the extensogram was 107 cm^2, quite stronger than the 80 cm^2 previously. The mixogram peak time on the Bühler milled flour averaged 2.5 minutes, similar to last season. The 100-gram baking test showed on average an excellent relationship between protein content and bread volume.

SUMMER RAINFALL AND IRRIGATION AREA
(Free State)

The summer rainfall area (predominantly the Free State Province) is a major dryland wheat production region of South Africa. Considerable variation in precipitation, soil types and average temperature occurs from east to west. The Free State is therefore commonly 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 and temperature and in particular the distribution through the growing season, is important for successful wheat production in the summer rainfall areas. The South Western Free State experienced severe drought conditions.

In all localities, lower than average rainfall was received during flowering and grain filling stages of the wheat. Conditions were also warmer than normal, which worsened the drought conditions. The Central Free State was the worst affected by these drought conditions. The yield potential on all the production regions was severely affected.

Planting dates vary from early to late according to region and commences in May and continues until July. Harvesting takes place from November to January.

The average hectolitre mass was 80.8 kg/hl. The thousand kernel mass (34.8 g) was 2.0 g lower than the previous season's 36.8 g and also 2.0 g lower than the RSA average. The average percentage screenings was 1.73%. The average whole wheat protein content increased from 12.4% the previous season to 13.2% (12% mb) this season. This protein is the highest of the three production areas. The falling number increased on average from 352 seconds in 2014/2015 to 387 seconds.

The mixogram (Quadromat Junior) peak time was 0.5 minutes shorter than the 3.2 minutes of the previous season. The average Bühler extraction percentage in the Free State was 73.6% (73.3% previous season). The Kent Jones flour colour was -3.4 KJ units (-3.1 KJ units in the previous season) and the L^* value 93.49 (previously 93.63). The average ash content was 0.64% and the average flour protein content 12.3%. The wet gluten content (14% mb) was 33.7% and the dry gluten 11.6%, the wet gluten increased by 4.2%. The gluten index averaged 93.

The average farinogram water absorption of 62.0% was higher than the previous season's 59.8% and 1.5 to 1.8% higher than the other two areas. The development time averaged 5.9 and the stability 7.7 minutes. Both the average alveogram strength of 41.3 cm^2 and extensogram strength of 105 cm^2 increased from the 2014/20154 season. This can be expected taking the increased protein content into account. The Bühler milled flour had an average mixograph peak time of 2.4 minutes. The 100-gram baking test showed that the relationship between protein content and bread volume was excellent between the different grades. Based on the average values, the irrigation wheat had the strongest rheological (dough) quality.

IRRIGATION AREAS
(Northern Cape, North West, Mpumalanga, Gauteng, Limpopo and KwaZulu-Natal)

Generally, the irrigation wheat production areas of South Africa can be divided 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 end of May and continues until beginning of August. Harvesting takes place from October to December.

The irrigation wheat had the highest weighted average hectolitre mass of 82.6 kg/hl. The thousand kernel mass was 37.9 g. The hectoliter mass increased by 1.4 kg/hl and the kernel mass decreased by 1.3 g. The average falling number was 405 seconds (slightly higher than the national average) and the screenings again averaged the lowest of the three areas at 1.43%.

The whole wheat protein content was on average 12.6% and the flour's protein content 11.4%. The average mixogram (Quadromat Junior) peak time averaged 2.8 minutes, the longest of the three areas, although there was only a difference of 0.2 minutes between the areas. The average Bühler extraction percentage was 74.3, little higher than last season and again the highest of the three production regions.

The dry colour L* value was 93.76 and the Kent Jones wet colour value -3.5 KJ units. The ash content averaged 0.66%. The wet and dry gluten contents were 30.8% and 10.5% respectively and the gluten index 95. The average farinogram water absorption was 60.5% (59.4% during the previous season), the development time 5.7 minutes and the stability 7.7 minutes.

The average alveogram strength was 37.5 cm^2 and the average P/L 0.80 (42.1 cm^2 and 0.57 respectively the previous season). Lower P/L values are indicative of dough being more extensible (having higher L values) than dough with higher P/L values. The average extensogram strength was 103 cm^2. The mixogram peak time averaged 2.7 minutes. The relationship between protein content and 100 g bread volume was also shown to be excellent.

Production area information were kindly provided by the ARC-Small Grain Institute.

Please see the results provided per individual production region on pages 32 to 57.

Table 5: Regional quality weighted averages

	Winter rainfall area (Western Cape)			Summer rainfall and Irrigation area (Free State)			Irrigation areas			RSA average		
Number of samples per area	**101**			**44**			**107**			**252**		
Regions	**2-6**			**21 - 28**			**10 - 11, 12 - 20, 32, 33, 34, 35, 36**			**All**		
Hectolitre mass dirty, kg/hl	79.7			80.8			82.6			81.1		
1000 kernel mass (13% mb), g	36.6			34.8			37.9			36.8		
Falling number, sec	383			387			405			393		
Screenings (1.8 mm sieve), %	1.86			1.73			1.43			1.71		
Protein (12% mb), % (ww)	12.8			13.2			12.6			12.8		
Mixogram peak time, min (Quadromat Junior)	2.6			2.7			2.8			2.7		
Composite samples per class and grade	***B1***	***B2***	***B3***	***B1***	***B2***	***B3***	***B1***	***B2***	***B3***	***B1***	***B2***	***B3***
	B4	***UT***	***COW***	***B4***	***UT***	***COW***	***B4***	***UT***	***COW***	***B4***	***UT***	***COW***
Composite samples, n = 70	***5***	***4***	***3***	***7***	***6***	***2***	***13***	***9***	***4***	***25***	***19***	***9***
	3	***5***	-	***2***	***1***	-	***3***	***3***	-	***8***	***9***	-
Bühler extraction, %	71.9	72.0	71.3	73.3	74.0	74.0	74.6	74.6	74.3	73.7	73.8	73.2
	72.4	71.5	-	73.1	74.3	-	73.5	73.2	-	73.0	72.4	-
Flour colour, KJ (wet)	-3.7	-3.6	-3.5	-3.4	-3.5	-3.2	-3.6	-3.6	-3.3	-3.6	-3.6	-3.3
	-3.7	-3.5	-	-3.2	-3.6	-	-3.4	-3.1	-	-3.5	-3.4	-
Colour, Minolta CM5 (dry)												
L*	94.11	94.07	94.03	93.52	93.54	93.40	93.81	93.85	93.56	93.79	93.80	93.68
	94.11	94.07	-	93.24	93.59	-	93.76	93.58	-	93.76	93.85	-
b*	10.49	10.09	10.17	9.91	9.76	9.84	9.35	9.41	9.57	9.73	9.66	9.83
	9.78	10.36	-	9.81	9.25	-	9.65	9.36	-	9.74	9.90	-
Ash (db), %	0.61	0.63	0.64	0.63	0.64	0.68	0.64	0.67	0.68	0.63	0.65	0.66
	0.62	0.64	-	0.62	0.69	-	0.67	0.71	-	0.64	0.67	-
Flour protein (12% mb), %	12.7	11.1	11.5	12.9	11.8	11.8	12.1	10.8	10.0	12.4	11.2	10.9
	11.4	12.0	-	13.0	11.8	-	11.6	12.2	-	11.9	12.0	-

Table 5: Regional quality weighted averages (continue)

	Winter rainfall area (Western Cape)			Summer rainfall and Irrigation area (Free State)			Irrigation areas			RSA average		
Regions	**2-6**			**21 - 28**			**10 - 11, 12 - 20, 32, 33, 34, 35, 36**			**All**		
Composite samples per class and grade	***B1***	***B2***	***B3***	***B1***	***B2***	***B3***	***B1***	***B2***	***B3***	***B1***	***B2***	***B3***
	B4	***UT***	***COW***	***B4***	***UT***	***COW***	***B4***	***UT***	***COW***	***B4***	***UT***	***COW***
Composite samples, n = 70	***5***	***4***	***3***	***7***	***6***	***2***	***13***	***9***	***4***	***25***	***19***	***9***
	3	***5***	***-***	***2***	***1***	***-***	***3***	***3***	***-***	***8***	***9***	***-***
Wet gluten (14% mb), %	34.7	29.6	30.4	35.1	31.9	32.6	32.8	29.2	26.7	33.8	30.1	29.3
	31.2	32.7	-	35.1	32.8	-	31.0	31.8	-	32.2	32.4	-
Dry gluten (14% mb), %	12.4	10.4	10.5	12.2	11.0	11.0	11.3	9.9	8.5	11.8	10.4	9.7
	10.4	11.3	-	12.5	10.8	-	11.0	11.0	-	11.2	11.1	-
Gluten Index	96	97	97	94	95	92	95	95	96	95	95	95
	94	95	-	94	84	-	96	97	-	95	94	-
Farinogram: Water absorption (14% mb), %	61.0	60.1	59.8	62.8	61.9	59.3	60.8	60.3	59.6	61.4	60.8	59.6
	59.4	60.4	-	63.1	59.6	-	60.1	60.9	-	60.6	60.5	-
Farinogram: Development time, min	6.3	5.2	6.2	6.3	5.5	4.9	6.0	5.2	5.6	6.2	5.3	5.7
	5.1	5.5	-	8.0	4.4	-	4.9	7.0	-	5.8	5.9	-
Farinogram: Stability, min	10.3	8.3	9.0	8.3	7.4	5.6	7.8	6.6	8.6	8.4	7.2	8.1
	8.4	8.0	-	9.8	4.4	-	6.6	10.8	-	8.1	8.5	-
Alveogram: Strength (S), cm²	39.5	37.2	34.9	44.3	38.0	33.0	40.8	33.4	33.0	41.5	35.6	33.6
	35.5	35.2	-	53.9	32.5	-	34.8	44.6	-	39.8	38.1	-
Alveogram: P/L	0.61	0.63	0.70	0.87	0.87	0.50	0.68	0.86	1.06	0.72	0.82	0.81
	0.62	0.63	-	0.73	0.41	-	0.62	0.94	-	0.65	0.71	-
Extensogram: Strength, cm²	111	101	113	113	95	101	115	89	90	114	94	100
	120	100	-	124	85	-	96	121	-	111	105	-
Mixogram peak time, min	2.4	2.6	2.6	2.4	2.5	2.4	2.6	2.6	2.9	2.5	2.6	2.7
	2.6	2.4	-	2.6	2.0	-	2.4	3.1	-	2.5	2.6	-
Relationship between protein and bread volume	EX	EX	EX	EX	EX	EX	EX	EX	EX	EX	EX	EX
	VG	EX	-	EX	EX	-	EX	EX	-	VG	EX	-

EX = Excellent VG = Very Good

RSA Production Regions

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

Figure 1: RSA Provinces

Provincial map with gratitude to SiQ.

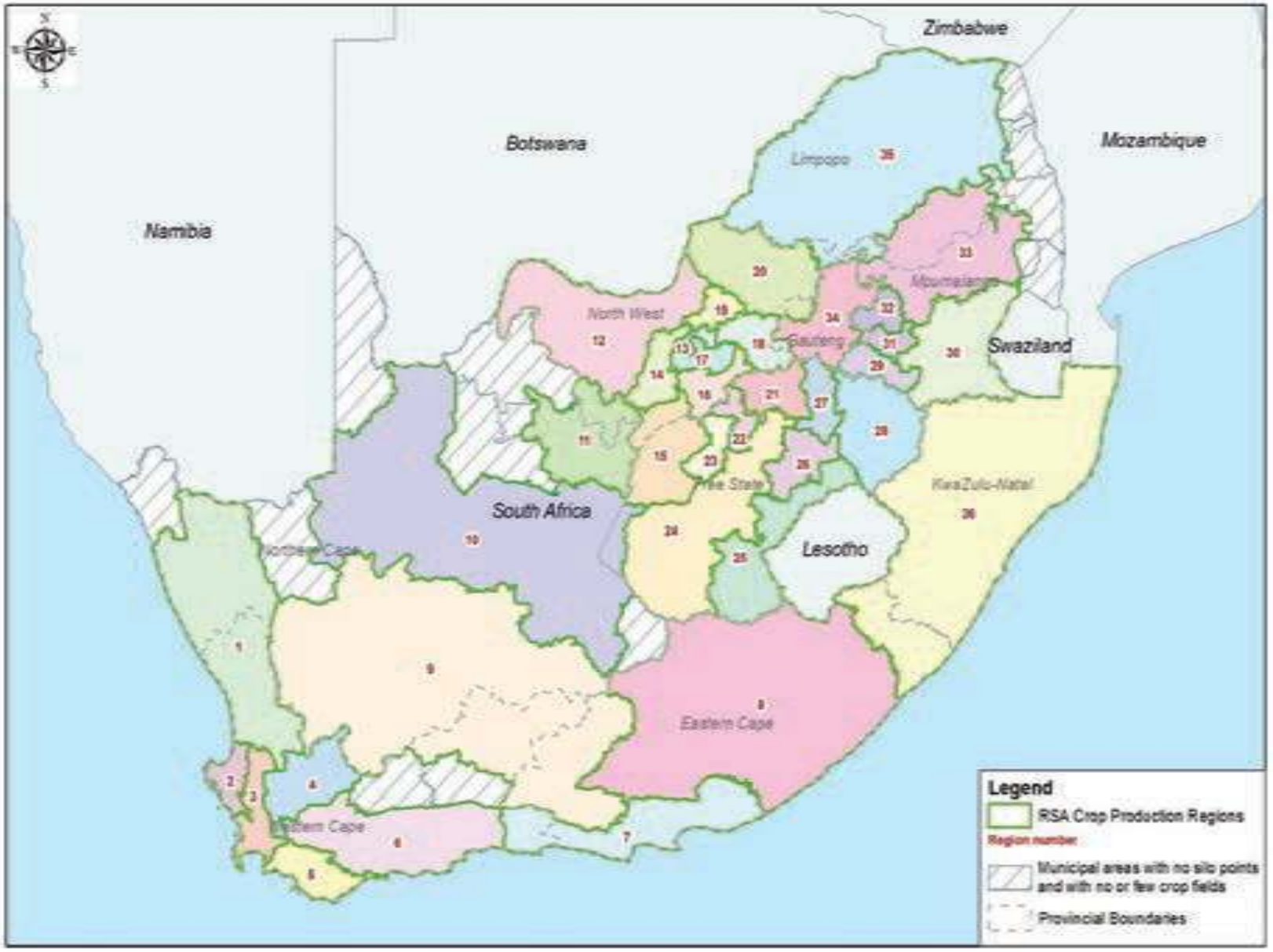
The 9 provinces are divided into 36 grain production regions.

The regions are distributed as follows:
Region 1: Namakwaland
Regions 2 and 3: Swartland
Regions 4 to 6: Rûens
Regions 7 and 8: Eastern Cape
Region 9: Karoo
Region 10: Griqualand West
Region 11: Vaalharts
Regions 12 to 20: North West
Regions 21 to 28: Free State
Regions 29 to 33: Mpumalanga
Region 34: Gauteng
Region 35: Limpopo
Region 36: KwaZulu-Natal

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

The production regions from which wheat samples were received for the crop quality survey of the 2015/2016 production season, are named and described on pages 28 to 31. The silo/intake stands as well as the type of storage structure are provided.

Figure 2: RSA Crop Production Regions



Regional map with gratitude to Agbiz Grain and SiQ.

Grain Production Regions

Silo/Intake stands per region indicating type of storage structure

Region 2: Swartland Western Region			
KaapAgri	Darling *(Bins)*	OverbergAgri	Bergrivier *(Bins)*
KaapAgri	Vredenburg *(Bins)*	OverbergAgri	Koperfontein *(Bins)*

Region 3: Swartland Central Region			
KaapAgri	Eendekuil *(Bins)*	KaapAgri	Ruststasie *(Bins)*
KaapAgri	Klipheuwel *(Bins)*	OverbergAgri	Koringberg *(Bins)*
KaapAgri	Malmesbury *(Bins)*	OverbergAgri	Moorreesburg *(Bins)*
KaapAgri	Piketberg *(Bins)*	OverbergAgri	Moravia *(Bins)*
KaapAgri	Pools *(Bins)*	Afgri	Eensgezind *(Bunkers)*

Region 4: Swartland Eastern Region			
KaapAgri	Ceres *(Bunkers)*	KaapAgri	Porterville *(Bins)*
KaapAgri	Ceres *(Bins)*	KaapAgri	Riebeeck-Wes *(Bins)*
KaapAgri	Gouda *(Bins)*	OverbergAgri	Leliedam *(Bins)*
KaapAgri	Halfmanshof *(Bins)*		

Region 5: Ruens Western Region			
OverbergAgri	Bredasdorp *(Bags/Bins/Bunkers)*	OverbergAgri	Napier *(Bags/Bins)*
OverbergAgri	Caledon *(Bins/Bunkers)*	OverbergAgri	Protem *(Bags/Bins)*
OverbergAgri	Klipdale *(Bags/Bins)*	OverbergAgri	Rietpoel *(Bags/Bins/Bunkers)*
OverbergAgri	Krige *(Bags/Bins/Bunkers)*		

Region 6: Ruens Eastern Region			
SSK	Albertinia *(Bins)*	SSK	Krombeks *(Bins)*
SSK	Ashton *(Bags/Bins)*	SSK	Protem *(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)*	GWK	Trans Oranje *(Bags/Bins/Bunkers)*
GWK	Luckhoff *(Bins)*	OVK	Havenga Brug *(Bins)*
GWK	Marydale *(Bins)*	OVK	Morgenzon *(Bins)*
GWK	Modderrivier *(Bags/Bins/Bulk)*	OVK	Oranjerivier *(Bins/Bunkers)*
GWK	Prieska *(Bins/Dams)*	OVK	Prieska *(Bins/Bunkers)*
GWK	Rietrivier *(Bins)*	OVK	Rietrivier *(Bins)*

Region 11: Vaalharts Region			
GWK	Barkly-Wes *(Bins/Bulk)*	Senwes	Jan Kempdorp *(Bins)*
GWK	Jan Kempdorp *(Bags/Bunkers)*	Senwes	Magogong *(Bins)*
Senwes	Hartswater *(Bins)*		

Grain Production Regions

Silo/Intake stands per region indicating type of storage structure

Region 12: North West Western Region			
NWK	Blaauwbank *(Bins)*	NWK	Mareetsane *(Bins)*
NWK	Bührmannsdrif *(Bins)*	Suidwes Landbou	Kameel *(Bins)*
NWK	Kameel *(Bins)*	Suidwes Landbou	Vryburg *(Bins)*

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

Region 15: North West Southern Eastern Region			
Suidwes Landbou	Bloemhof *(Bins)*	Suidwes Landbou	Kingswood *(Bins)*
Suidwes Landbou	Christiana *(Bins)*	Suidwes Landbou	Kruising *(Bunkers)*
Suidwes Landbou	Hertzogville *(Bins)*	Suidwes Landbou	Poppieland *(Bunkers)*
Suidwes Landbou	Hoopstad *(Bins)*		

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

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

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

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

Grain Production Regions (continue)

Silo/Intake stands per region indicating type of storage structure

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

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

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

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

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

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

Grain Production Regions (continue)

Silo/Intake stands per region indicating type of storage structure

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

Region 32: Mpumalanga Western Region			
Afgri	Argent *(Bins/Bunkers)*	Afgri	Hawerklip *(Bins)*
Afgri	Dryden *(Bins)*	Afgri	Kendal *(Bins)*
Afgri	Eloff *(Bins)*	Afgri	Ogies *(Bins)*
Afgri	Endicott *(Bins)*		

Region 33: Mpumalanga Northern Region			
Afgri	Arnot *(Bins)*	Afgri	Middelburg *(Bins)*
Afgri	Driefontein *(Bins)*	Afgri	Pan *(Bins)*
Afgri	Lydenburg *(Bins)*	Afgri	Stoffberg *(Bins)*
Afgri	Marble Hall *(Bins)*	Afgri	Wonderfontein *(Bins)*

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

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

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

South African Quality data per production region

WINTER RAINFALL WHEAT

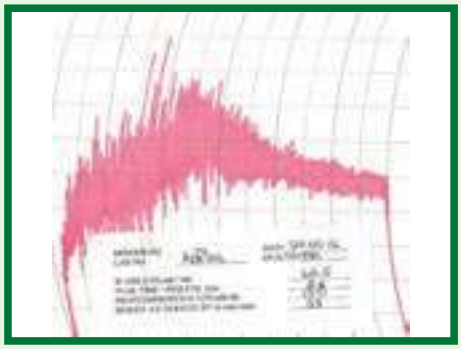
PRODUCTION REGION	(2) Swartland Western Region				(3) Swartland Central Region			
WHEAT								
	ave	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Protein (12% mb), %	15.0	13.3	16.2	1.08	14.4	11.3	18.7	1.78
Falling number, sec	397	380	414	12.33	402	319	509	38.79
1000 Kernel mass (13% mb), g	31.2	28.4	32.9	1.37	31.5	24.1	40.1	4.18
Hectolitre mass (dirty), kg/hl	77.1	72.5	79.8	2.55	78.6	71.2	81.7	2.74
Screenings (<1.8 mm sieve), %	2.40	1.08	4.76	1.52	2.46	0.86	5.98	1.25
Total damaged kernels, %	1.07	0.46	2.40	0.64	0.65	0.08	5.00	0.87
Combined deviations, %	4.52	2.04	8.88	2.68	4.18	1.43	11.82	1.87
Number of samples	***10***				***33***			
CULTIVARS								
	SST 88	49.7			SST 88	32.8		
cultivars	SST 015	19.3			SST 015	26.2		
with highest %	SST 087	16.6			SST 087	17.3		
occurrence	SST 056	11.7			SST 056	12.2		
	SST 027	1.8			SST 027	10.6		
Number of samples	***10***				***33***			
MIXOGRAM (Quadromat Junior)								
	ave	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Peak time, min	2.6	2.4	2.8	0.13	2.7	2.0	3.7	0.35
Tail height (6 min), mm	54	52	58	1.76	56	50	65	3.70
Number of samples	***10***				***33***			

	COMPOSITE SAMPLES											
CLASS AND GRADE	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**
BÜHLER EXTRACTION, %	70.6	-	-	-	69.1	-	70.5	70.2	66.9	68.6	71.1	-
FLOUR												
Protein (12% mb), %	14.7	-	-	-	13.5	-	13.3	12.6	15.4	16.6	13.1	-
Ash (db), %	0.63	-	-	-	0.66	-	0.58	0.66	0.61	0.66	0.65	-
Colour, KJ (wet)	-3.5	-	-	-	-3.3	-	-3.7	-3.2	-3.5	-3.3	-3.5	-
Colour, Minolta CM5 (dry)												
L*	93.93	-	-	-	94.01	-	94.36	93.97	94.40	93.92	94.05	-
a*	0.53	-	-	-	0.43	-	0.44	0.43	0.45	0.54	0.48	-
b*	11.39	-	-	-	10.58	-	10.73	10.35	10.39	10.75	10.49	-
RVA												
Peak Viscosity, cP	2115	-	-	-	2194	-	2236	2171	2256	2110	2179	-
Minimum viscosity (Through), cP	1492	-	-	-	1579	-	1645	1481	1456	1452	1552	-
Final Viscosity, cP	2412	-	-	-	2485	-	2571	2455	2573	2295	2544	-
Peak Time, min	7.00	-	-	-	7.00	-	7.00	7.00	7.00	7.00	7.00	-
GLUTEN												
Wet gluten (14% mb), %	41.3	-	-	-	37.3	-	35.9	33.6	41.3	47.7	35.4	-
Dry gluten (14% mb), %	14.9	-	-	-	12.9	-	12.5	11.9	14.4	16.1	12.7	-
Gluten Index	91	-	-	-	96	-	98	96	98	91	92	-
FARINOGRAM												
Water absorption (14% mb), %	62.4	-	-	-	62.1	-	62.3	61.0	62.1	63.9	61.6	-
Development time, min	7.7	-	-	-	6.5	-	7.5	8.1	11.8	10.1	6.6	-
Stability, min	13.9	-	-	-	10.0	-	13.5	12.7	15.8	15.6	8.7	-
Mixing tolerance index, BU	19	-	-	-	27	-	19	20	12	13	28	-
EXTENSOGRAM (45 min pull)												
Area, cm^2	122	-	-	-	119	-	128	151	211	175	118	-
Maximum height, BU	381	-	-	-	364	-	377	482	524	441	346	-
Extensibility, mm	234	-	-	-	233	-	245	228	288	276	238	-
ALVEOGRAM												
Strength (S), cm^2	47.7	-	-	-	42.5	-	45.4	45.6	54.7	58.0	39.3	-
Stability (P), mm	74	-	-	-	80	-	89	81	76	79	73	-
Distensibility (L), mm	164	-	-	-	134	-	112	136	165	191	139	-
Configuration ratio (P/L)	0.45	-	-	-	0.60	-	0.79	0.60	0.46	0.41	0.53	-
MIXOGRAM												
Peak time, min	2.4	-	-	-	2.5	-	2.4	2.8	2.9	2.5	2.3	-
100g BAKING TEST												
Loaf volume, cm^3	1168	-	-	-	1119	-	1155	1110	1102	1015	1149	-
Evaluation (see page 69)	0	-	-	-	0	-	0	0	1	4	0	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

2



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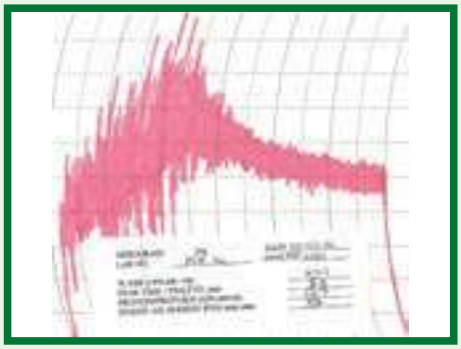
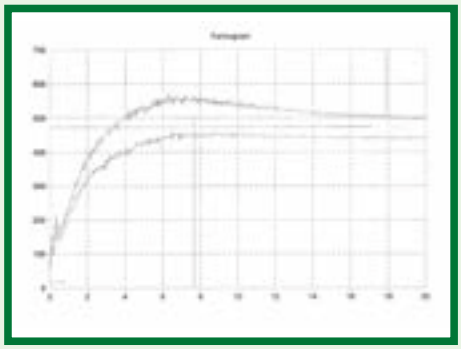


FARINOGRAM

2



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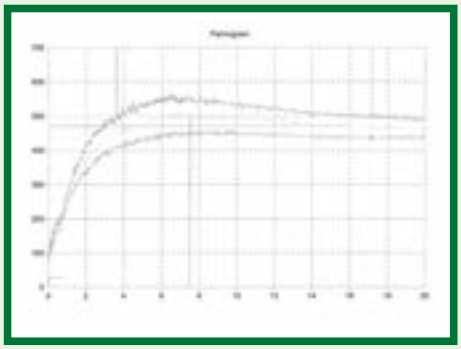
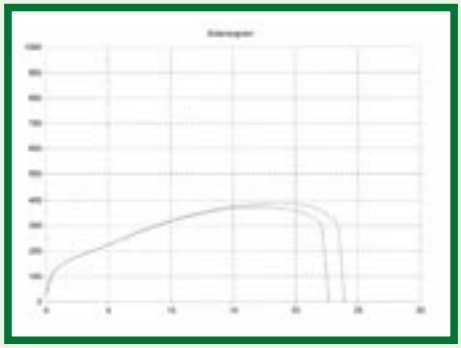


EXTENSOGRAM

2



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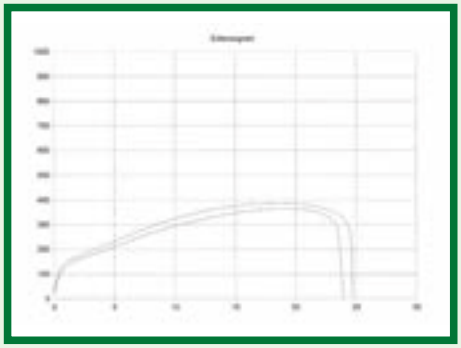
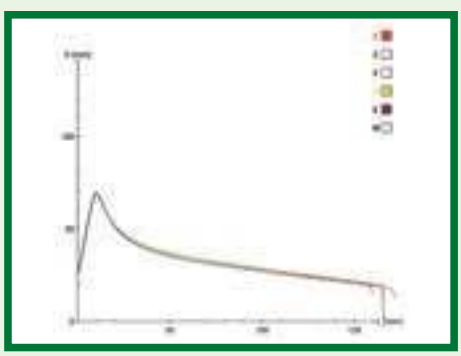


ALVEOGRAM

2



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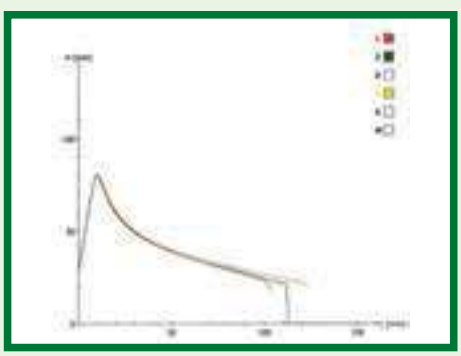


South African Quality data per production region

WINTER RAINFALL WHEAT

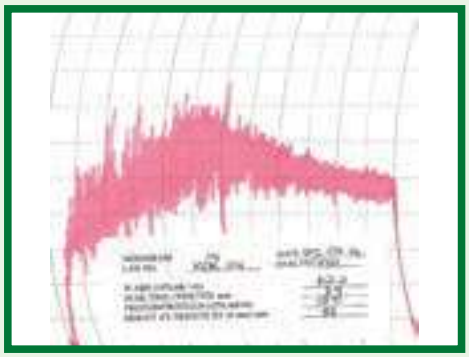
PRODUCTION REGION	(4) Swartland Eastern Region				(5) Rûens Western Region			
WHEAT								
	ave	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Protein (12% mb), %	12.4	10.6	14.6	1.05	11.1	8.9	13.6	1.02
Falling number, sec	379	333	417	29.23	377	340	405	20.09
1000 Kernel mass (13% mb), g	33.5	30.9	37.5	1.73	43.4	35.7	50.6	3.21
Hectolitre mass (dirty), kg/hl	80.5	78.8	82.1	1.05	81.0	72.0	83.9	2.52
Screenings (<1.8 mm sieve), %	1.36	0.10	2.98	1.16	1.43	0.12	2.73	0.73
Total damaged kernels, %	0.42	0.12	0.60	0.15	0.53	0.08	2.00	0.39
Combined deviations, %	2.71	0.74	5.98	1.49	2.61	0.63	6.95	1.39
Number of samples	***15***				***23***			
CULTIVARS								
	SST 88	32.6			SST 087	31.6		
cultivars	SST 015	23.5			SST 015	24.8		
with highest %	SST 087	23.2			SST 88	21.6		
occurrence	SST 056	14.2			SST 056	14.6		
	SST 027	4.3			SST 027	7.4		
Number of samples	***15***				***23***			
MIXOGRAM (Quadromat Junior)								
	ave	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Peak time, min	2.8	2.4	3.1	0.22	2.5	2.0	3.0	0.27
Tail height (6 min), mm	52	50	55	1.58	50	45	55	2.64
Number of samples	***15***				***23***			

	COMPOSITE SAMPLES											
CLASS AND GRADE	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**
BÜHLER EXTRACTION, %	71.6	70.7	-	-	71.2	-	73.4	73.6	73.9	74.4	73.2	-
FLOUR												
Protein (12% mb), %	11.8	10.7	-	-	13.5	-	11.7	10.5	9.6	9.4	9.2	-
Ash (db), %	0.60	0.60	-	-	0.62	-	0.61	0.64	0.64	0.57	0.64	-
Colour, KJ (wet)	-3.9	-3.9	-	-	-3.6	-	-3.7	-4.0	-3.5	-3.8	-3.5	-
Colour, Minolta CM5 (dry)												
L*	94.18	94.21	-	-	94.15	-	94.17	94.12	93.88	94.01	94.07	-
a*	0.47	0.43	-	-	0.48	-	0.46	0.43	0.52	0.41	0.42	-
b*	11.08	10.54	-	-	10.90	-	9.62	9.74	10.15	10.08	9.45	-
RVA												
Peak Viscosity, cP	2125	2223	-	-	2216	-	2338	2202	2188	2200	2305	-
Minimum viscosity (Through), cP	1605	1714	-	-	1526	-	1645	1673	1664	1606	1700	-
Final Viscosity, cP	2531	2672	-	-	2552	-	2789	2591	2624	2582	2724	-
Peak Time, min	7.00	7.00	-	-	7.00	-	7.00	7.00	7.00	7.00	7.00	-
GLUTEN												
Wet gluten (14% mb), %	31.8	28.3	-	-	37.8	-	32.6	27.8	25.3	24.6	24.6	-
Dry gluten (14% mb), %	11.8	9.9	-	-	12.8	-	11.3	9.5	8.7	8.2	8.5	-
Gluten Index	97	98	-	-	95	-	97	96	97	94	94	-
FARINOGRAM												
Water absorption (14% mb), %	59.9	59.2	-	-	61.4	-	60.2	59.8	58.2	58.5	57.3	-
Development time, min	6.0	4.3	-	-	6.7	-	5.3	4.4	3.5	2.8	3.2	-
Stability, min	9.2	8.0	-	-	10.1	-	7.5	6.2	5.6	4.6	4.8	-
Mixing tolerance index, BU	26	28	-	-	29	-	34	40	39	54	52	-
EXTENSOGRAM (45 min pull)												
Area, cm^2	114	100	-	-	121	-	88	73	63	64	54	-
Maximum height, BU	386	369	-	-	387	-	315	291	279	295	236	-
Extensibility, mm	212	192	-	-	221	-	195	174	157	148	156	-
ALVEOGRAM												
Strength (S), cm^2	36.1	37.0	-	-	41.1	-	32.6	33.2	24.5	25.5	22.9	-
Stability (P), mm	79	78	-	-	78	-	72	77	73	75	64	-
Distensibility (L), mm	108	120	-	-	130	-	123	119	81	83	98	-
Configuration ratio (P/L)	0.73	0.65	-	-	0.60	-	0.59	0.65	0.90	0.90	0.65	-
MIXOGRAM												
Peak time, min	2.7	2.6	-	-	2.5	-	2.2	2.5	2.4	2.4	2.3	-
100g BAKING TEST												
Loaf volume, cm^3	1113	1062	-	-	1166	-	1060	893	891	873	909	-
Evaluation (see page 69)	0	0	-	-	0	-	0	0	0	0	0	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

4



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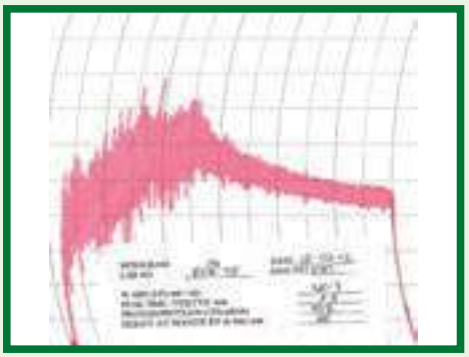
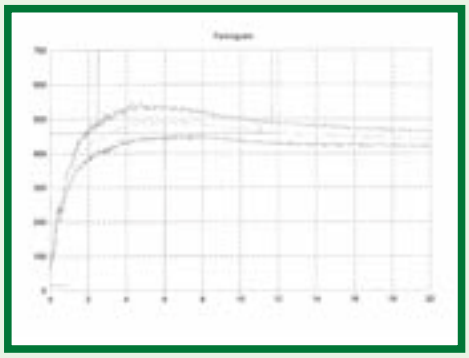


FARINOGRAM

4



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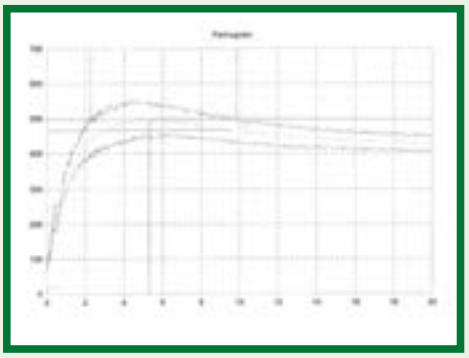
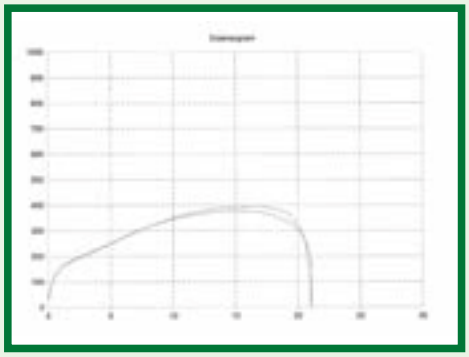


EXTENSOGRAM

4



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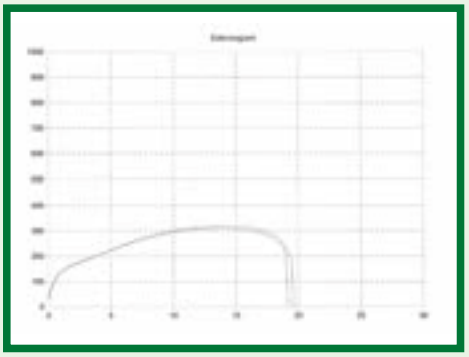
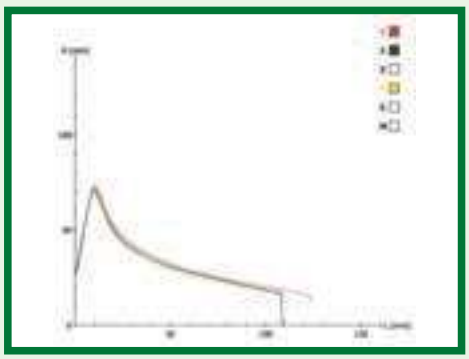


ALVEOGRAM

4



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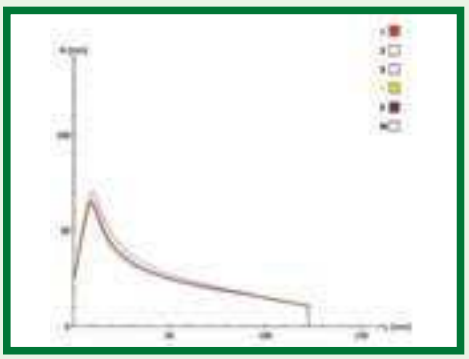


South African Quality data per production region

WINTER RAINFALL WHEAT

IRRIGATION WHEAT

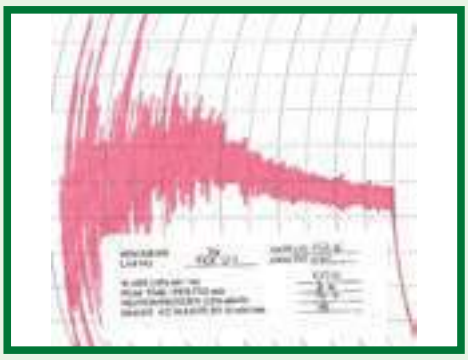
PRODUCTION REGION	(6) Rûens Eastern Region				(10) Griqualand-West			
WHEAT								
	ave	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Protein (12% mb), %	11.3	9.1	13.4	0.99	12.8	11.3	13.9	0.62
Falling number, sec	357	325	401	20.74	378	334	443	24.57
1000 Kernel mass (13% mb), g	42.1	34.6	45.9	3.49	37.7	30.7	42.2	2.97
Hectolitre mass (dirty), kg/hl	80.7	78.4	83.1	1.11	84.0	80.3	86.2	1.56
Screenings (<1.8 mm sieve), %	1.48	0.45	3.89	0.89	1.76	0.18	5.29	1.15
Total damaged kernels, %	0.63	0.18	1.72	0.48	0.30	0.08	0.86	0.22
Combined deviations, %	3.12	1.07	6.86	1.39	2.62	0.56	9.03	1.71
Number of samples	***20***				***24***			
CULTIVARS								
	SST 087	43.6			SST 884	38.0		
cultivars	SST 88	19.0			SST 835	14.8		
with highest %	SST 056	13.3			SST 875	12.1		
occurrence	SST 027	11.8			PAN 3471	11.5		
	SST 015	11.6			SST 843	7.3		
Number of samples	***20***				***24***			
MIXOGRAM (Quadromat Junior)								
	ave	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Peak time, min	2.4	2.0	2.7	0.16	2.3	1.4	3.0	0.35
Tail height (6 min), mm	52	47	55	2.09	48	41	55	3.45
Number of samples	***20***				***24***			

	COMPOSITE SAMPLES											
CLASS AND GRADE	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**
BÜHLER EXTRACTION, %	73.6	73.4	73.2	74.1	73.1	-	74.8	74.7	-	73.1	-	-
FLOUR												
Protein (12% mb), %	11.8	10.6	9.6	8.2	10.5	-	11.9	10.5	-	12.2	-	-
Ash (db), %	0.62	0.63	0.67	0.62	0.61	-	0.65	0.67	-	0.66	-	-
Colour, KJ (wet)	-3.5	-3.3	-3.5	-3.9	-3.7	-	-3.9	-4.0	-	-3.5	-	-
Colour, Minolta CM5 (dry)												
L*	93.91	93.98	93.80	94.39	94.05	-	93.74	93.99	-	93.86	-	-
a*	0.46	0.43	0.47	0.28	0.46	-	0.59	0.57	-	0.58	-	-
b*	9.62	9.72	9.98	8.51	10.37	-	9.72	9.34	-	9.71	-	-
RVA												
Peak Viscosity, cP	2321	2210	2188	2857	2238	-	2236	2340	-	2250	-	-
Minimum viscosity (Through), cP	1647	1700	1730	1884	1700	-	1706	1757	-	1673	-	-
Final Viscosity, cP	2735	2636	2573	3261	2663	-	2580	2653	-	2400	-	-
Peak Time, min	7.00	7.00	7.00	7.00	7.00	-	7.00	7.00	-	7.00	-	-
GLUTEN												
Wet gluten (14% mb), %	32.0	28.6	24.7	21.3	28.3	-	34.2	29.2	-	33.9	-	-
Dry gluten (14% mb), %	11.4	10.1	8.4	7.0	9.7	-	11.4	9.9	-	11.9	-	-
Gluten Index	98	99	97	96	99	-	94	95	-	96	-	-
FARINOGRAM												
Water absorption (14% mb), %	60.1	60.5	59.0	55.7	59.5	-	61.4	60.3	-	61.9	-	-
Development time, min	4.9	4.0	3.4	2.5	4.5	-	5.2	4.5	-	5.7	-	-
Stability, min	7.2	6.2	5.5	5.1	6.2	-	6.4	5.1	-	7.4	-	-
Mixing tolerance index, BU	36	42	47	54	43	-	41	46	-	35	-	-
EXTENSOGRAM (45 min pull)												
Area, cm^2	105	78	65	-	86	-	91	82	-	93	-	-
Maximum height, BU	347	289	276	-	324	-	326	337	-	330	-	-
Extensibility, mm	213	191	162	-	188	-	198	171	-	199	-	-
ALVEOGRAM												
Strength (S), cm^2	35.8	32.9	25.5	22.9	30.4	-	36.7	28.1	-	35.9	-	-
Stability (P), mm	70	76	72	61	75	-	79	79	-	84	-	-
Distensibility (L), mm	144	121	96	110	100	-	114	82	-	99	-	-
Configuration ratio (P/L)	0.49	0.63	0.75	0.55	0.75	-	0.69	0.96	-	0.85	-	-
MIXOGRAM												
Peak time, min	2.2	2.6	2.4	2.8	2.4	-	2.2	2.3	-	2.5	-	-
100g BAKING TEST												
Loaf volume, cm^3	1073	956	921	889	1005	-	1091	1025	-	1115	-	-
Evaluation (see page 69)	0	0	0	0	0	-	0	0	-	0	-	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

6



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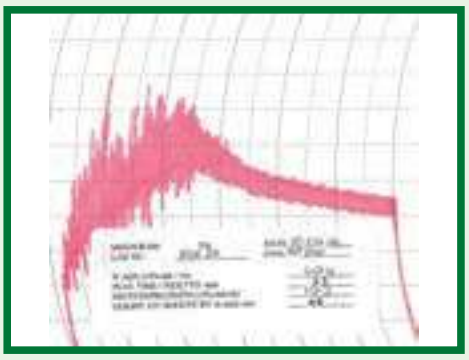
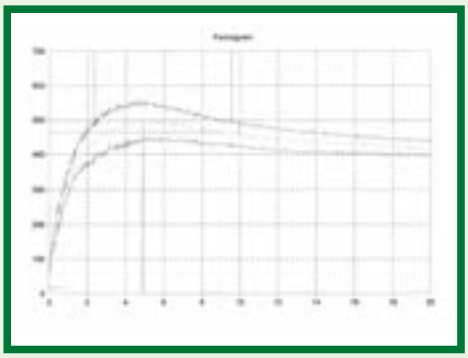


FARINOGRAM

6



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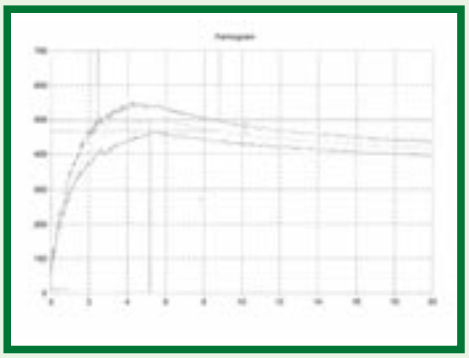
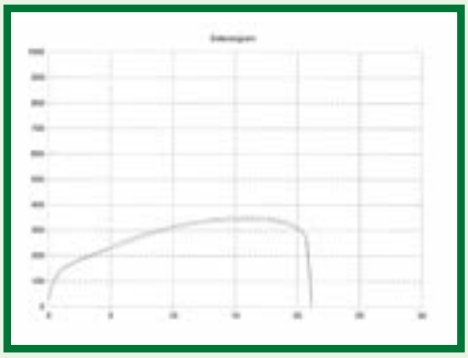


EXTENSOGRAM

6



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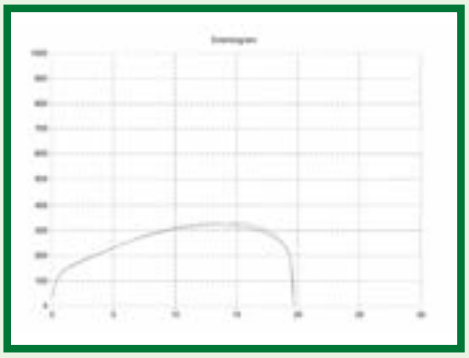
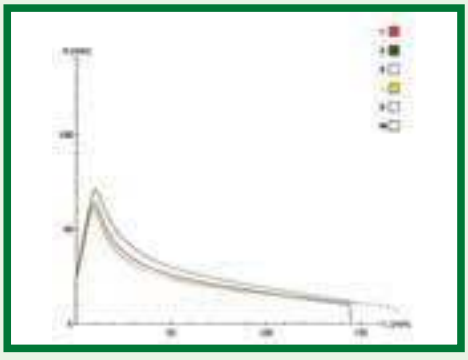


ALVEOGRAM

6



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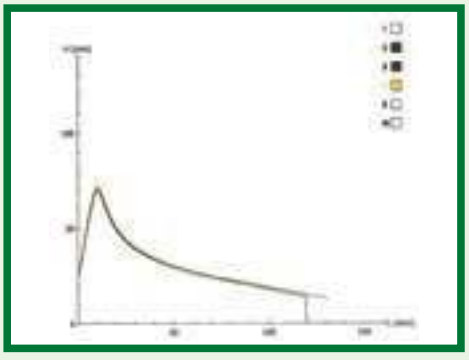


South African Quality data per production region

IRRIGATION WHEAT

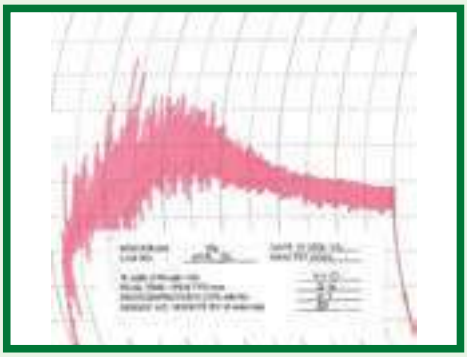
PRODUCTION REGION	(11) Vaalharts				(12) North-West Western Region			
WHEAT								
	ave	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Protein (12% mb), %	12.5	10.3	13.3	1.09	13.2	10.0	16.3	2.01
Falling number, sec	408	344	516	67.42	409	362	438	23.00
1000 Kernel mass (13% mb), g	37.1	34.1	39.1	1.87	36.8	26.4	42.5	6.00
Hectolitre mass (dirty), kg/hl	83.2	81.4	84.0	0.91	82.0	77.7	84.9	2.48
Screenings (<1.8 mm sieve), %	1.15	0.17	2.96	1.07	1.44	0.44	4.00	1.09
Total damaged kernels, %	0.36	0.18	0.68	0.19	1.27	0.24	4.12	1.37
Combined deviations, %	2.09	0.70	4.22	1.36	3.56	1.28	6.54	1.99
Number of samples	***7***				***8***			
CULTIVARS								
	PAN 3471	35.1			SST 884	50.0		
cultivars	SST 835	16.9			SST 843	18.8		
with highest %	SST 884	13.0			DUZI	9.3		
occurrence	SST 875	12.3			SST 875	7.3		
	SST 843	7.1			PAN 3471	5.6		
Number of samples	***7***				***8***			
MIXOGRAM (Quadromat Junior)								
	ave	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Peak time, min	2.5	2.1	2.9	0.28	3.0	2.2	5.1	1.16
Tail height (6 min), mm	50	46	54	2.37	53	45	72	9.34
Number of samples	***7***				***8***			

	COMPOSITE SAMPLES											
CLASS AND GRADE	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**
BÜHLER EXTRACTION, %	74.5	75.5	75.0	-	-	-	74.8	74.6	74.1	-	71.7	-
FLOUR												
Protein (12% mb), %	12.3	10.8	9.5	-	-	-	12.1	11.0	9.4	-	14.2	-
Ash (db), %	0.69	0.67	0.71	-	-	-	0.64	0.62	0.69	-	0.68	-
Colour, KJ (wet)	-3.9	-3.9	-3.9	-	-	-	-3.7	-4.0	-3.6	-	-3.3	-
Colour, Minolta CM5 (dry)												
L*	93.77	93.78	93.94	-	-	-	93.98	93.96	93.44	-	93.72	-
a*	0.51	0.49	0.50	-	-	-	0.56	0.47	0.46	-	0.58	-
b*	9.72	9.80	9.22	-	-	-	9.18	9.08	9.79	-	9.24	-
RVA												
Peak Viscosity, cP	2344	2550	2514	-	-	-	2340	2244	2199	-	2190	-
Minimum viscosity (Through), cP	1800	2013	1927	-	-	-	1740	1612	1562	-	1596	-
Final Viscosity, cP	2517	2903	2828	-	-	-	2540	2495	2501	-	2358	-
Peak Time, min	7.00	7.00	7.00	-	-	-	7.00	7.00	7.00	-	7.00	-
GLUTEN												
Wet gluten (14% mb), %	32.7	29.6	27.2	-	-	-	35.0	30.5	25.5	-	34.6	-
Dry gluten (14% mb), %	11.3	10.1	7.5	-	-	-	12.0	9.9	8.4	-	12.6	-
Gluten Index	95	93	97	-	-	-	92	87	91	-	99	-
FARINOGRAM												
Water absorption (14% mb), %	61.3	61.1	58.7	-	-	-	60.4	59.9	58.7	-	61.9	-
Development time, min	5.4	4.1	2.8	-	-	-	4.7	4.2	4.0	-	10.2	-
Stability, min	5.8	4.4	4.2	-	-	-	5.5	4.9	5.2	-	16.5	-
Mixing tolerance index, BU	55	47	52	-	-	-	46	46	49	-	14	-
EXTENSOGRAM (45 min pull)												
Area, cm^2	101	64	63	-	-	-	90	72	70	-	171	-
Maximum height, BU	376	227	269	-	-	-	347	301	336	-	523	-
Extensibility, mm	193	191	161	-	-	-	187	166	149	-	240	-
ALVEOGRAM												
Strength (S), cm^2	37.5	28.0	25.7	-	-	-	32.1	28.4	22.2	-	62.5	-
Stability (P), mm	79	70	70	-	-	-	67	77	78	-	101	-
Distensibility (L), mm	119	113	100	-	-	-	119	89	60	-	117	-
Configuration ratio (P/L)	0.66	0.62	0.70	-	-	-	0.56	0.87	1.30	-	0.86	-
MIXOGRAM												
Peak time, min	2.3	1.9	2.2	-	-	-	2.2	2.2	2.4	-	3.7	-
100g BAKING TEST												
Loaf volume, cm^3	1138	987	908	-	-	-	1102	980	862	-	1150	-
Evaluation (see page 69)	0	0	0	-	-	-	0	0	0	-	0	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

11



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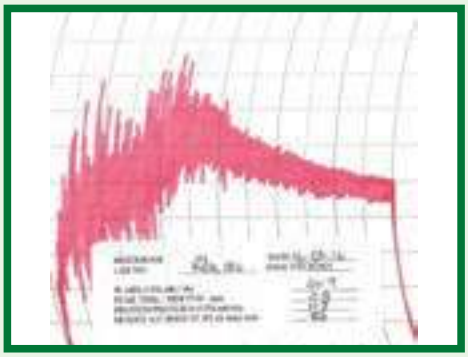
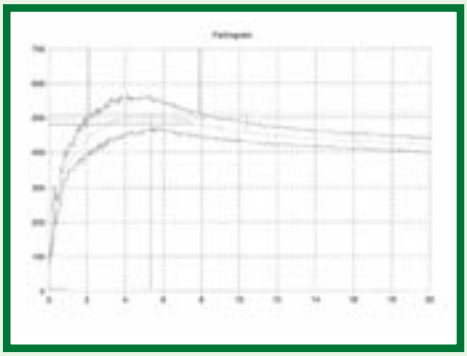


FARINOGRAM

11



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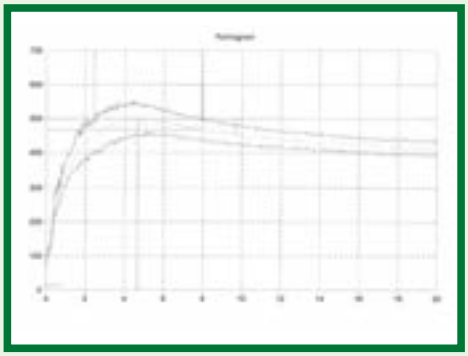
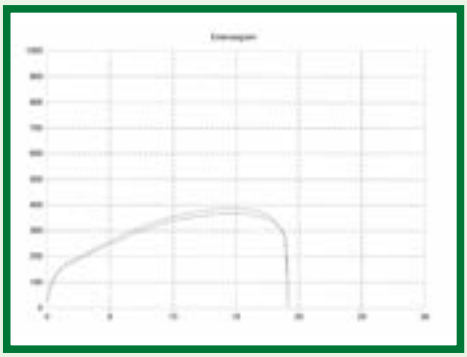


EXTENSOGRAM

11



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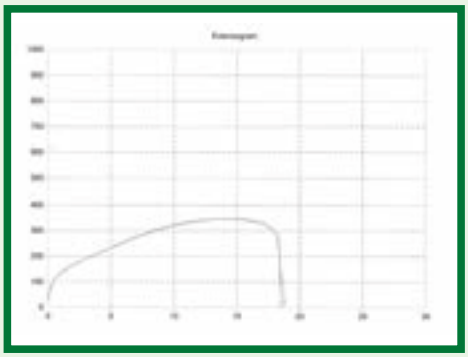
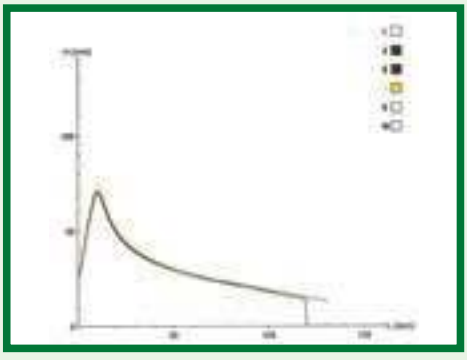


ALVEOGRAM

11



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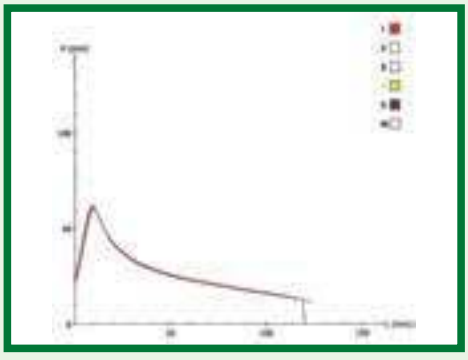


South African Quality data per production region

IRRIGATION WHEAT

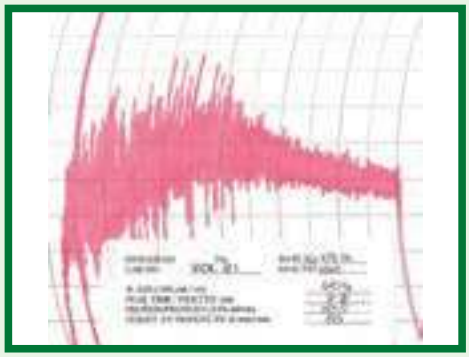
PRODUCTION REGION	(14) North-West Southern Region				(15) North-West Southern-Eastern Region			
WHEAT								
	ave	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Protein (12% mb), %	12.2	11.2	13.6	0.86	12.6	11.6	13.5	0.78
Falling number, sec	428	384	473	28.76	410	348	465	51.29
1000 Kernel mass (13% mb), g	40.3	32.2	45.6	4.69	39.4	35.8	42.2	3.19
Hectolitre mass (dirty), kg/hl	79.4	75.3	82.5	3.00	83.6	82.8	85.1	1.03
Screenings (<1.8 mm sieve), %	1.80	0.54	7.00	1.81	1.19	0.48	1.91	0.63
Total damaged kernels, %	0.57	0.14	1.08	0.39	0.50	0.08	0.84	0.31
Combined deviations, %	3.34	1.12	9.34	2.19	2.11	1.06	3.00	0.96
Number of samples	***11***				***4***			
CULTIVARS								
	SST 843	21.5			SST 884	38.3		
cultivars	SST 884	14.7			PAN 3471	36.8		
with highest %	SST 88	12.4			DUZI	11.0		
occurrence	SST 087	11.9			SST 835	6.5		
	SST 875	10.1			PAN 3478	4.0		
Number of samples	***11***				***4***			
MIXOGRAM (Quadromat Junior)								
	ave	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Peak time, min	3.0	2.3	3.9	0.56	2.4	2.3	2.4	0.05
Tail height (6 min), mm	54	46	59	3.80	51	50	52	0.96
Number of samples	***11***				***4***			

	COMPOSITE SAMPLES											
CLASS AND GRADE	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**
BÜHLER EXTRACTION, %	73.8	73.8	74.7	-	73.9	-	73.9	76.3	-	-	-	-
FLOUR												
Protein (12% mb), %	12.8	11.1	11.3	-	11.0	-	12.0	10.9	-	-	-	-
Ash (db), %	0.67	0.70	0.72	-	0.76	-	0.70	0.69	-	-	-	-
Colour, KJ (wet)	-3.7	-3.2	-2.3	-	-2.6	-	-3.3	-3.7	-	-	-	-
Colour, Minolta CM5 (dry)												
L*	94.07	93.94	93.47	-	93.68	-	93.89	93.66	-	-	-	-
a*	0.52	0.43	0.06	-	0.37	-	0.45	0.45	-	-	-	-
b*	9.31	8.99	9.02	-	9.10	-	9.34	10.25	-	-	-	-
RVA												
Peak Viscosity, cP	2415	2303	2438	-	2091	-	2293	2098	-	-	-	-
Minimum viscosity (Through), cP	1747	1655	1760	-	1521	-	1702	1565	-	-	-	-
Final Viscosity, cP	2571	2577	2862	-	2327	-	2537	2368	-	-	-	-
Peak Time, min	7.00	7.00	7.00	-	7.00	-	7.00	7.00	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	32.8	30.4	28.8	-	30.5	-	33.4	29.8	-	-	-	-
Dry gluten (14% mb), %	11.6	10.4	9.5	-	10.2	-	11.3	10.1	-	-	-	-
Gluten Index	99	96	96	-	95	-	95	93	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	59.7	60.1	59.4	-	60.6	-	60.6	62.3	-	-	-	-
Development time, min	8.2	5.5	8.2	-	5.5	-	5.2	4.6	-	-	-	-
Stability, min	10.4	7.1	12.6	-	7.2	-	6.6	5.9	-	-	-	-
Mixing tolerance index, BU	34	39	23	-	41	-	41	48	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm^2	160	97	114	-	84	-	91	78	-	-	-	-
Maximum height, BU	534	394	438	-	318	-	343	300	-	-	-	-
Extensibility, mm	223	178	187	-	186	-	193	185	-	-	-	-
ALVEOGRAM												
Strength (S), cm^2	51.9	34.4	39.9	-	35.0	-	30.0	37.5	-	-	-	-
Stability (P), mm	79	87	90	-	90	-	78	89	-	-	-	-
Distensibility (L), mm	143	88	104	-	88	-	90	104	-	-	-	-
Configuration ratio (P/L)	0.55	0.99	0.87	-	1.02	-	0.87	0.86	-	-	-	-
MIXOGRAM												
Peak time, min	3.3	2.7	3.7	-	2.7	-	2.3	2.3	-	-	-	-
100g BAKING TEST												
Loaf volume, cm^3	1190	1014	1085	-	1008	-	1084	1028	-	-	-	-
Evaluation (see page 69)	0	0	0	-	0	-	0	0	-	-	-	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

14



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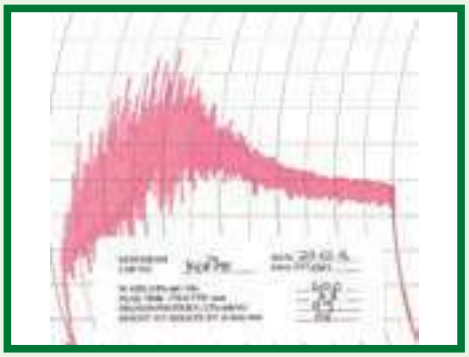
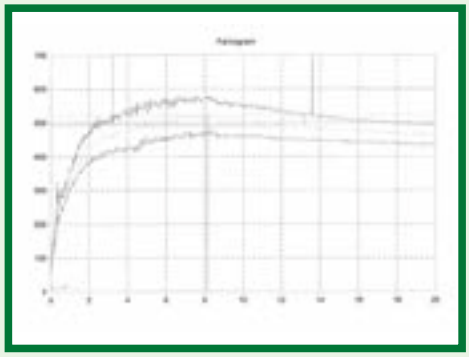


FARINOGRAM

14



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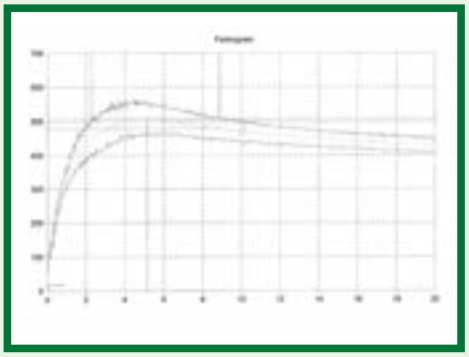
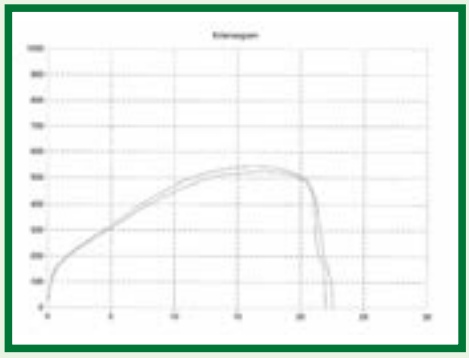


EXTENSOGRAM

14



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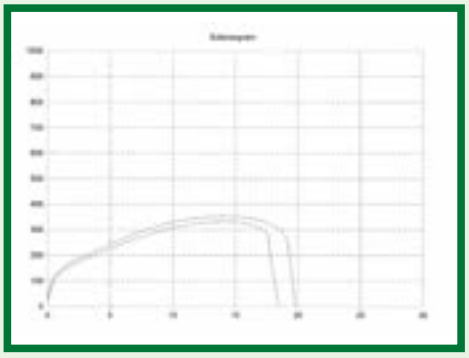
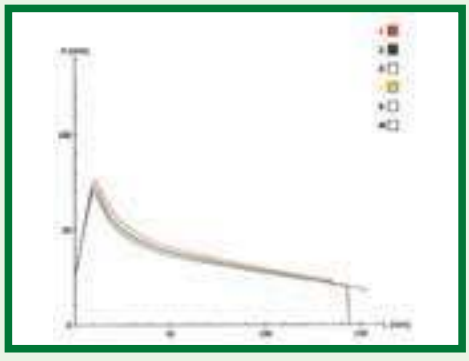


ALVEOGRAM

14



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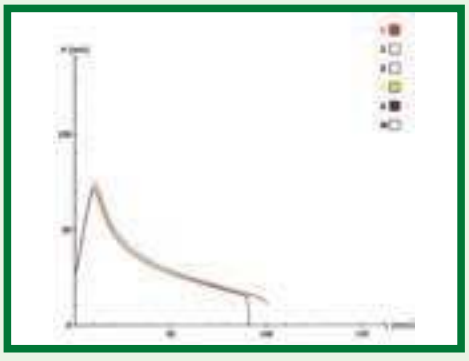


South African Quality data per production region

IRRIGATION WHEAT

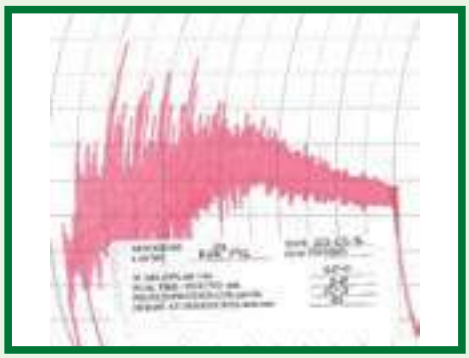
PRODUCTION REGION	(16) North-West Central Eastern Region				(18) North-West Central Region (Ventersdorp)			
WHEAT	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Protein (12% mb), %	11.5	-	-	-	13.1	-	-	-
Falling number, sec	540	-	-	-	430	-	-	-
1000 Kernel mass (13% mb), g	39.0	-	-	-	38.7	-	-	-
Hectolitre mass (dirty), kg/hl	83.8	-	-	-	82.5	-	-	-
Screenings (<1.8 mm sieve), %	1.51	-	-	-	2.13	-	-	-
Total damaged kernels, %	0.30	-	-	-	0.50	-	-	-
Combined deviations, %	1.99	-	-	-	3.13	-	-	-
Number of samples	***1***				***1***			
CULTIVARS								
cultivars with highest % occurrence	SST 843 37.0 SST 884 22.0 SST 015 15.0 SST 835 14.0 SST 88 12.0				PAN 3471 54.0 SST 875 31.0 SST 884 15.0 - - - -			
Number of samples	***1***				***1***			
MIXOGRAM (Quadromat Junior)	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Peak time, min	3.0	-	-	-	2.4	-	-	-
Tail height (6 min), mm	51	-	-	-	50	-	-	-
Number of samples	***1***				***1***			

	COMPOSITE SAMPLES											
CLASS AND GRADE	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**
BÜHLER EXTRACTION, %	-	74.5	-	-	-	-	76.1	-	-	-	-	-
FLOUR												
Protein (12% mb), %	-	10.4	-	-	-	-	12.3	-	-	-	-	-
Ash (db), %	-	0.68	-	-	-	-	0.63	-	-	-	-	-
Colour, KJ (wet)	-	-3.3	-	-	-	-	-3.4	-	-	-	-	-
Colour, Minolta CM5 (dry)												
L*	-	93.93	-	-	-	-	93.60	-	-	-	-	-
a*	-	0.41	-	-	-	-	0.48	-	-	-	-	-
b*	-	8.92	-	-	-	-	9.33	-	-	-	-	-
RVA												
Peak Viscosity, cP	-	2691	-	-	-	-	2468	-	-	-	-	-
Minimum viscosity (Through), cP	-	2007	-	-	-	-	1858	-	-	-	-	-
Final Viscosity, cP	-	2723	-	-	-	-	2712	-	-	-	-	-
Peak Time, min	-	7.00	-	-	-	-	7.00	-	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	-	28.2	-	-	-	-	34.1	-	-	-	-	-
Dry gluten (14% mb), %	-	9.3	-	-	-	-	11.8	-	-	-	-	-
Gluten Index	-	96	-	-	-	-	88	-	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	-	59.5	-	-	-	-	60.9	-	-	-	-	-
Development time, min	-	5.2	-	-	-	-	4.5	-	-	-	-	-
Stability, min	-	8.1	-	-	-	-	5.1	-	-	-	-	-
Mixing tolerance index, BU	-	37	-	-	-	-	66	-	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm^2	-	108	-	-	-	-	96	-	-	-	-	-
Maximum height, BU	-	469	-	-	-	-	324	-	-	-	-	-
Extensibility, mm	-	165	-	-	-	-	209	-	-	-	-	-
ALVEOGRAM												
Strength (S), cm^2	-	38.2	-	-	-	-	40.9	-	-	-	-	-
Stability (P), mm	-	92	-	-	-	-	70	-	-	-	-	-
Distensibility (L), mm	-	97	-	-	-	-	163	-	-	-	-	-
Configuration ratio (P/L)	-	0.95	-	-	-	-	0.43	-	-	-	-	-
MIXOGRAM												
Peak time, min	-	3.0	-	-	-	-	2.0	-	-	-	-	-
100g BAKING TEST												
Loaf volume, cm^3	-	929	-	-	-	-	1145	-	-	-	-	-
Evaluation (see page 69)	-	0	-	-	-	-	0	-	-	-	-	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

16



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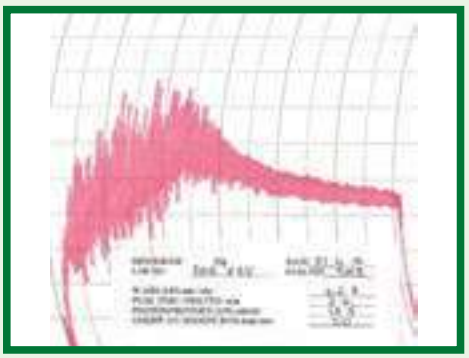
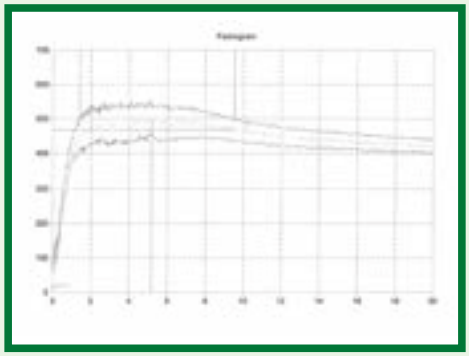


FARINOGRAM

16



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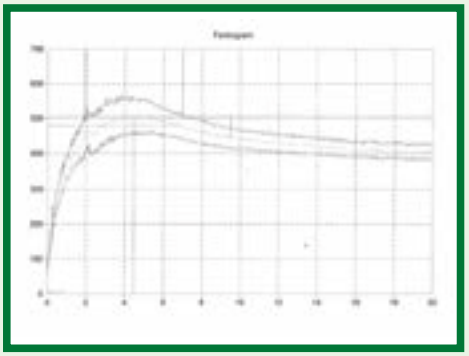
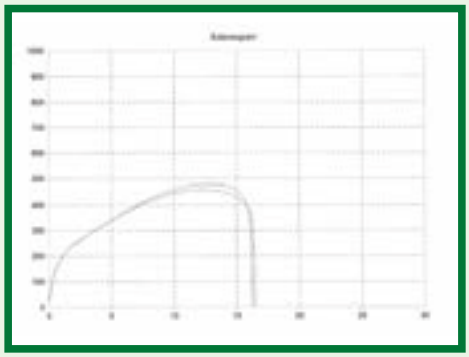


EXTENSOGRAM

16



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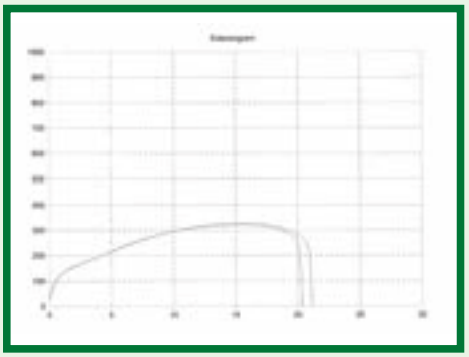
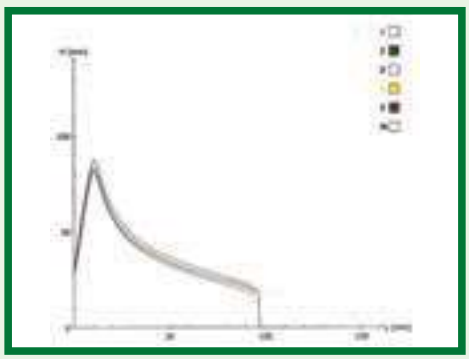


ALVEOGRAM

16



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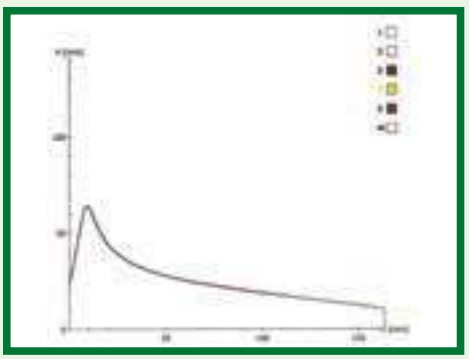


South African Quality data per production region

IRRIGATION WHEAT

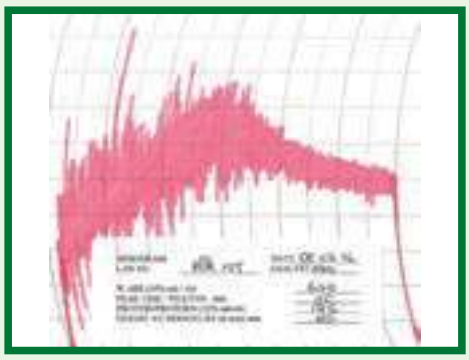
PRODUCTION REGION	(19) North-West Central Region (Lichtenburg)				(20) North-West Eastern Region			
WHEAT								
	ave	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Protein (12% mb), %	11.8	9.3	13.4	1.30	12.3	11.2	14.4	1.11
Falling number, sec	402	363	433	19.05	425	395	445	18.88
1000 Kernel mass (13% mb), g	38.8	32.6	46.0	4.73	35.2	28.9	38.8	3.28
Hectolitre mass (dirty), kg/hl	81.1	74.5	84.5	2.51	83.8	81.6	84.6	1.07
Screenings (<1.8 mm sieve), %	1.44	0.57	2.60	0.59	1.17	0.80	1.90	0.40
Total damaged kernels, %	0.66	0.24	2.92	0.72	0.51	0.32	0.86	0.18
Combined deviations, %	3.16	1.01	9.92	2.35	1.86	1.21	2.86	0.59
Number of samples	***13***				***8***			
CULTIVARS								
	SST 843	43.2			SST 843	42.1		
cultivars	SST 087	11.2			SST 835	16.9		
with highest %	SST 056	10.1			SST 884	15.1		
occurrence	SST 015	9.5			SST 875	13.1		
	SST 884	7.2			PAN 3471	6.9		
Number of samples	***13***				***8***			
MIXOGRAM (Quadromat Junior)								
	ave	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Peak time, min	3.0	2.2	4.0	0.56	3.3	2.9	4.0	0.35
Tail height (6 min), mm	54	46	59	4.07	52	50	60	3.49
Number of samples	***13***				***8***			

	COMPOSITE SAMPLES											
CLASS AND GRADE	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**
BÜHLER EXTRACTION, %	74.3	73.9	-	73.6	-	-	72.4	73.7	-	-	-	-
FLOUR												
Protein (12% mb), %	12.1	10.6	-	9.2	-	-	12.5	10.4	-	-	-	-
Ash (db), %	0.60	0.63	-	0.64	-	-	0.64	0.63	-	-	-	-
Colour, KJ (wet)	-3.9	-3.7	-	-3.4	-	-	-3.6	-3.9	-	-	-	-
Colour, Minolta CM5 (dry)												
L*	93.97	93.96	-	94.13	-	-	94.00	93.99	-	-	-	-
a*	0.49	0.50	-	0.40	-	-	0.48	0.47	-	-	-	-
b*	9.64	9.30	-	9.19	-	-	9.05	9.39	-	-	-	-
RVA												
Peak Viscosity, cP	2358	2248	-	2415	-	-	2326	2346	-	-	-	-
Minimum viscosity (Through), cP	1638	1650	-	1823	-	-	1616	1645	-	-	-	-
Final Viscosity, cP	2619	2578	-	2763	-	-	2625	2674	-	-	-	-
Peak Time, min	7.00	7.00	-	7.00	-	-	7.00	7.00	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	31.8	27.7	-	23.5	-	-	32.5	27.1	-	-	-	-
Dry gluten (14% mb), %	11.1	9.6	-	7.8	-	-	11.5	9.6	-	-	-	-
Gluten Index	99	97	-	95	-	-	99	98	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	60.9	60.5	-	56.6	-	-	60.2	59.1	-	-	-	-
Development time, min	7.2	6.0	-	3.3	-	-	8.6	7.0	-	-	-	-
Stability, min	8.8	8.2	-	5.0	-	-	13.7	9.2	-	-	-	-
Mixing tolerance index, BU	36	38	-	56	-	-	22	34	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm^2	136	101	-	59	-	-	150	112	-	-	-	-
Maximum height, BU	456	380	-	283	-	-	541	497	-	-	-	-
Extensibility, mm	218	193	-	147	-	-	202	166	-	-	-	-
ALVEOGRAM												
Strength (S), cm^2	46.5	36.9	-	26.1	-	-	48.5	36.7	-	-	-	-
Stability (P), mm	89	84	-	64	-	-	87	88	-	-	-	-
Distensibility (L), mm	118	103	-	114	-	-	116	91	-	-	-	-
Configuration ratio (P/L)	0.75	0.82	-	0.56	-	-	0.75	0.97	-	-	-	-
MIXOGRAM												
Peak time, min	3.0	2.9	-	2.6	-	-	3.4	3.0	-	-	-	-
100g BAKING TEST												
Loaf volume, cm^3	1078	914	-	902	-	-	1091	931	-	-	-	-
Evaluation (see page 69)	0	0	-	0	-	-	0	0	-	-	-	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

19



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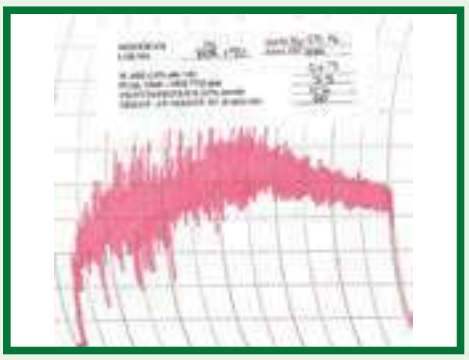
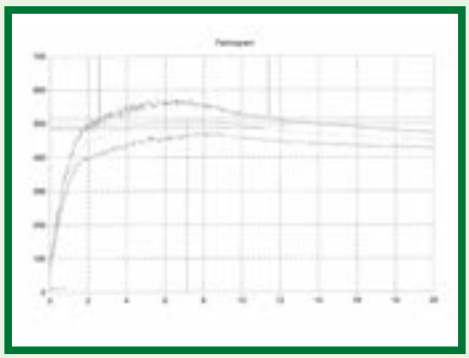


FARINOGRAM

19



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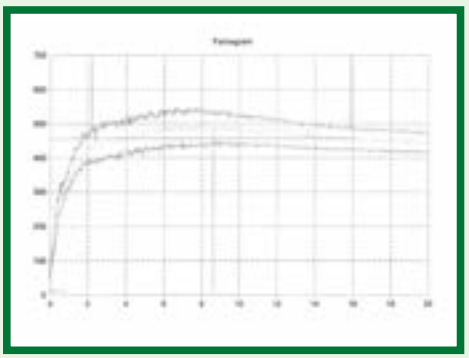
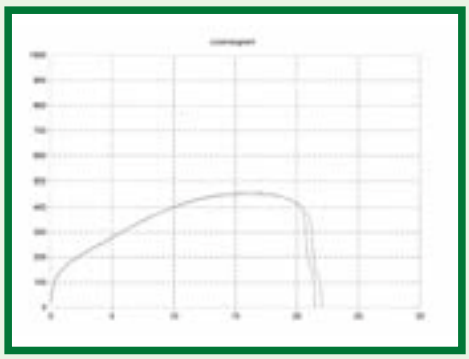


EXTENSOGRAM

19



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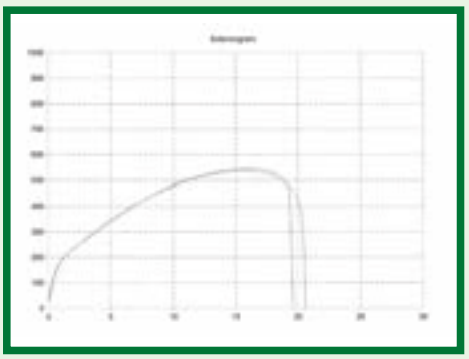
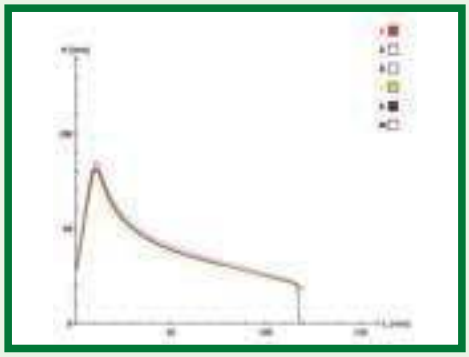


ALVEOGRAM

19



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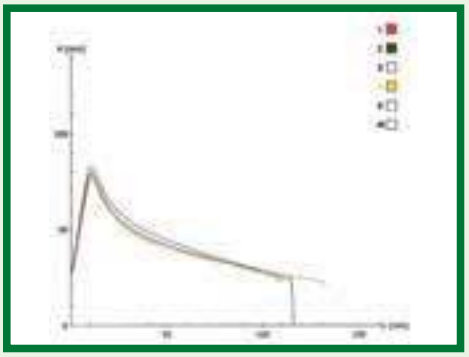


South African Quality data per production region

SUMMER RAINFALL AND IRRIGATION WHEAT

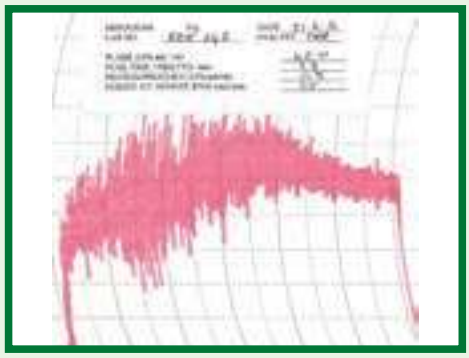
PRODUCTION REGION	(21) Free-State North-Western Region (Viljoenskroon)				(22) Free-State North-Western Region (Bothaville)			
WHEAT	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Protein (12% mb), %	13.0	-	-	-	12.7	11.9	13.5	1.13
Falling number, sec	460	-	-	-	409	386	431	31.82
1000 Kernel mass (13% mb), g	33.7	-	-	-	35.4	35.1	35.7	0.42
Hectolitre mass (dirty), kg/hl	78.7	-	-	-	83.2	83.0	83.4	0.28
Screenings (<1.8 mm sieve), %	1.28	-	-	-	1.36	1.35	1.37	0.01
Total damaged kernels, %	0.28	-	-	-	0.76	0.64	0.88	0.17
Combined deviations, %	1.90	-	-	-	2.88	2.59	3.17	0.41
Number of samples	***1***				***2***			
CULTIVARS								
	SST 884	100.0			SST 884	41.0		
cultivars	-	-			PAN 3471	35.5		
with highest %	-	-			SST 875	15.0		
occurrence	-	-			SST 387	8.5		
	-	-			-	-		
Number of samples	***1***				***2***			
MIXOGRAM (Quadromat Junior)	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Peak time, min	3.8	-	-	-	2.4	2.1	2.7	0.42
Tail height (6 min), mm	55	-	-	-	54	50	57	4.95
Number of samples	***1***				***2***			

	COMPOSITE SAMPLES											
CLASS AND GRADE	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**
BÜHLER EXTRACTION, %	74.6	-	-	-	-	-	74.1	75.6	-	-	-	-
FLOUR												
Protein (12% mb), %	12.0	-	-	-	-	-	12.9	11.3	-	-	-	-
Ash (db), %	0.67	-	-	-	-	-	0.68	0.64	-	-	-	-
Colour, KJ (wet)	-3.1	-	-	-	-	-	-3.6	-3.7	-	-	-	-
Colour, Minolta CM5 (dry)												
L*	93.34	-	-	-	-	-	93.74	93.74	-	-	-	-
a*	0.49	-	-	-	-	-	0.49	0.49	-	-	-	-
b*	9.57	-	-	-	-	-	9.51	10.16	-	-	-	-
RVA												
Peak Viscosity, cP	2723	-	-	-	-	-	2440	2355	-	-	-	-
Minimum viscosity (Through), cP	2056	-	-	-	-	-	1809	1825	-	-	-	-
Final Viscosity, cP	2687	-	-	-	-	-	2690	2654	-	-	-	-
Peak Time, min	7.00	-	-	-	-	-	7.00	7.00	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	31.1	-	-	-	-	-	36.2	30.5	-	-	-	-
Dry gluten (14% mb), %	11.0	-	-	-	-	-	12.3	10.2	-	-	-	-
Gluten Index	99	-	-	-	-	-	93	94	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	59.3	-	-	-	-	-	61.6	60.5	-	-	-	-
Development time, min	7.4	-	-	-	-	-	4.0	3.8	-	-	-	-
Stability, min	11.2	-	-	-	-	-	4.9	4.0	-	-	-	-
Mixing tolerance index, BU	26	-	-	-	-	-	54	51	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm^2	146	-	-	-	-	-	92	77	-	-	-	-
Maximum height, BU	531	-	-	-	-	-	346	299	-	-	-	-
Extensibility, mm	201	-	-	-	-	-	188	179	-	-	-	-
ALVEOGRAM												
Strength (S), cm^2	45.9	-	-	-	-	-	35.9	29.7	-	-	-	-
Stability (P), mm	83	-	-	-	-	-	74	72	-	-	-	-
Distensibility (L), mm	124	-	-	-	-	-	128	108	-	-	-	-
Configuration ratio (P/L)	0.67	-	-	-	-	-	0.58	0.67	-	-	-	-
MIXOGRAM												
Peak time, min	3.4	-	-	-	-	-	1.9	1.9	-	-	-	-
100g BAKING TEST												
Loaf volume, cm^3	1100	-	-	-	-	-	1093	1130	-	-	-	-
Evaluation (see page 69)	0	-	-	-	-	-	0	0	-	-	-	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

21



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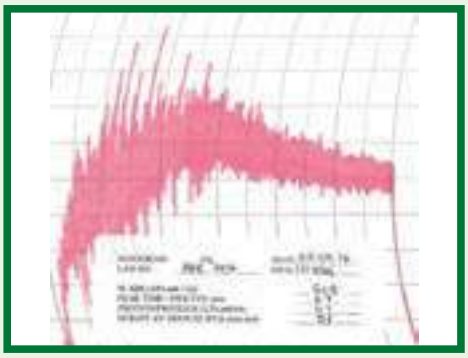
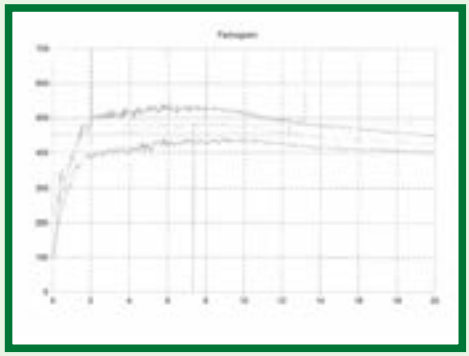


FARINOGRAM

21



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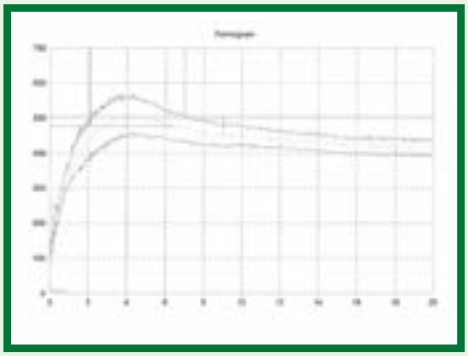
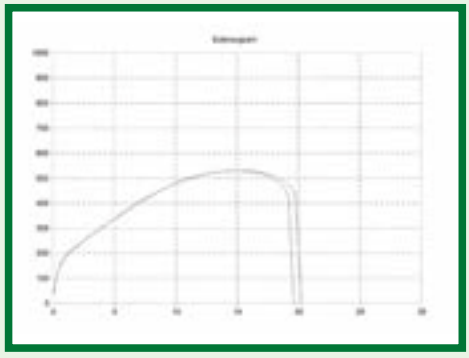


EXTENSOGRAM

21



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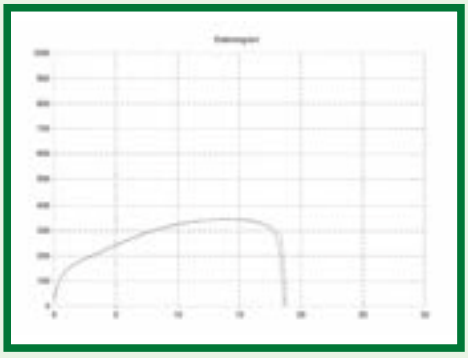
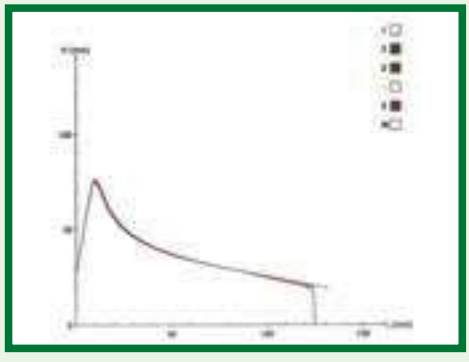


ALVEOGRAM

21



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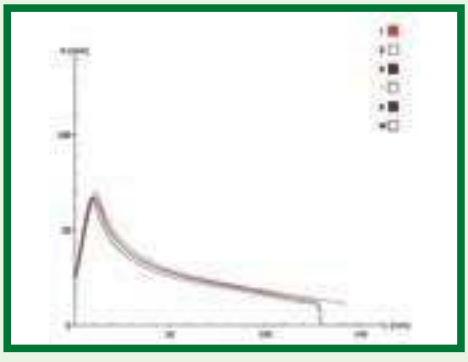


South African Quality data per production region

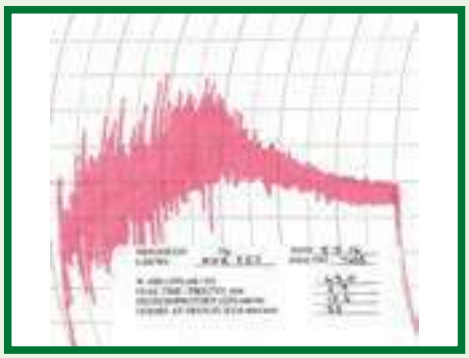
SUMMER RAINFALL AND IRRIGATION WHEAT

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), %	13.7	10.7	16.7	1.87	12.3	10.7	14.8	1.37
Falling number, sec	409	356	472	34.92	398	355	443	21.85
1000 Kernel mass (13% mb), g	30.9	22.6	35.4	3.99	35.6	25.8	40.9	5.19
Hectolitre mass (dirty), kg/hl	78.6	72.0	83.8	3.53	81.3	77.0	85.3	2.66
Screenings (<1.8 mm sieve), %	3.63	1.98	10.28	2.77	1.82	1.00	2.50	0.51
Total damaged kernels, %	0.48	0.08	0.92	0.27	0.31	0.12	0.66	0.15
Combined deviations, %	4.70	2.90	11.82	2.99	2.61	1.82	3.34	0.43
Number of samples	***8***				***11***			
CULTIVARS								
cultivars with highest % occurrence	PAN 3471 19.9 PAN 3120 14.4 PAN 3161 12.5 SST 375 12.5 SST 835 11.3				SST 875 21.7 SST 835 15.7 SST 884 9.5 DUZI 9.1 PAN 3478 8.8			
Number of samples	***8***				***11***			
MIXOGRAM (Quadromat Junior)	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Peak time, min	3.2	2.7	3.7	0.36	2.6	2.1	3.1	0.35
Tail height (6 min), mm	55	52	59	2.59	51	47	57	3.20
Number of samples	***8***				***11***			
	COMPOSITE SAMPLES							
CLASS AND GRADE	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**
BÜHLER EXTRACTION, %	72.4	71.3	73.7	73.0	-	-	74.0	74.3	74.2	-	-	-
FLOUR												
Protein (12% mb), %	12.7	11.9	12.6	12.3	-	-	12.2	11.3	11.1	-	-	-
Ash (db), %	0.61	0.67	0.63	0.68	-	-	0.68	0.65	0.72	-	-	-
Colour, KJ (wet)	-3.2	-3.5	-3.1	-3.1	-	-	-3.7	-3.4	-3.2	-	-	-
Colour, Minolta CM5 (dry)												
L*	93.16	93.43	93.42	93.32	-	-	93.84	93.69	93.38	-	-	-
a*	0.47	0.46	0.46	0.53	-	-	0.51	0.50	0.50	-	-	-
b*	10.60	9.76	9.48	10.07	-	-	9.36	9.52	10.20	-	-	-
RVA												
Peak Viscosity, cP	2458	2297	2386	2530	-	-	2468	2498	2934	-	-	-
Minimum viscosity (Through), cP	1849	1707	1861	1878	-	-	1837	1862	2307	-	-	-
Final Viscosity, cP	2750	2530	2483	2657	-	-	2669	2689	3131	-	-	-
Peak Time, min	7.00	7.00	7.00	7.00	-	-	7.00	7.00	6.93	-	-	-
GLUTEN												
Wet gluten (14% mb), %	34.4	32.3	34.0	32.0	-	-	34.0	30.9	31.2	-	-	-
Dry gluten (14% mb), %	12.1	11.7	11.7	11.4	-	-	12.0	10.5	10.3	-	-	-
Gluten Index	92	96	97	99	-	-	94	94	87	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	63.1	62.2	59.7	61.2	-	-	61.6	61.2	58.9	-	-	-
Development time, min	6.7	6.3	5.8	9.2	-	-	5.9	3.9	4.0	-	-	-
Stability, min	10.7	10.4	7.0	11.3	-	-	6.7	5.1	4.2	-	-	-
Mixing tolerance index, BU	25	24	40	36	-	-	44	52	61	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm^2	106	107	123	145	-	-	114	84	78	-	-	-
Maximum height, BU	406	396	390	498	-	-	407	297	297	-	-	-
Extensibility, mm	185	194	224	213	-	-	202	201	184	-	-	-
ALVEOGRAM												
Strength (S), cm^2	51.4	42.8	39.4	53.1	-	-	38.1	31.0	26.6	-	-	-
Stability (P), mm	107	100	63	97	-	-	84	71	65	-	-	-
Distensibility (L), mm	101	93	182	120	-	-	106	111	101	-	-	-
Configuration ratio (P/L)	1.06	1.08	0.35	0.81	-	-	0.79	0.64	0.64	-	-	-
MIXOGRAM												
Peak time, min	2.7	2.8	2.4	3.0	-	-	2.3	2.3	2.3	-	-	-
100g BAKING TEST												
Loaf volume, cm^3	1119	1071	1193	1131	-	-	1151	1111	1050	-	-	-
Evaluation (see page 69)	0	0	0	0	-	-	0	0	0	-	-	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

23



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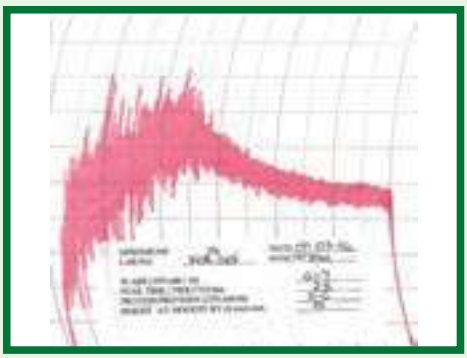
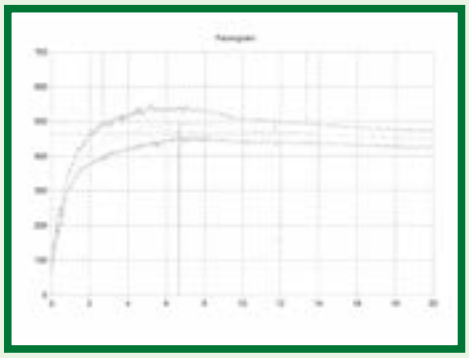


FARINOGRAM

23



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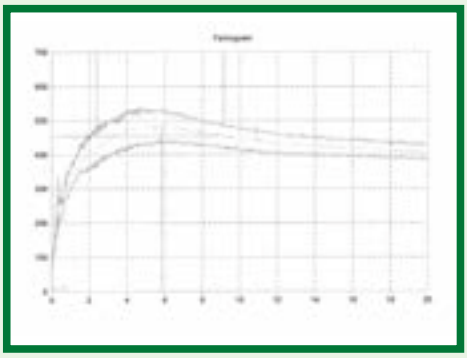
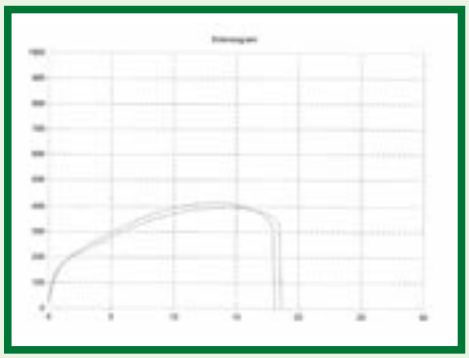


EXTENSOGRAM

23



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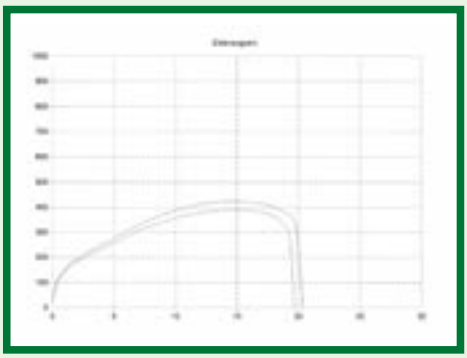
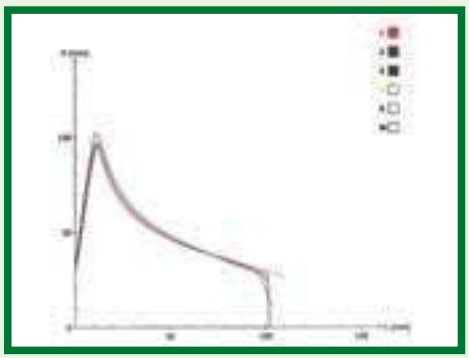


ALVEOGRAM

23



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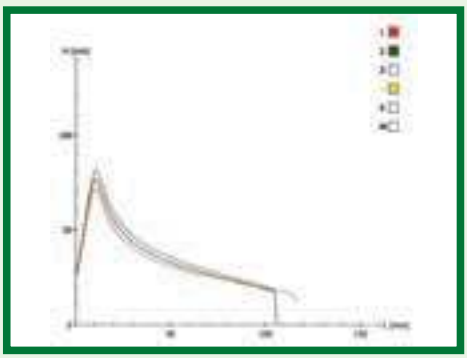


South African Quality data per production region

SUMMER RAINFALL AND IRRIGATION WHEAT

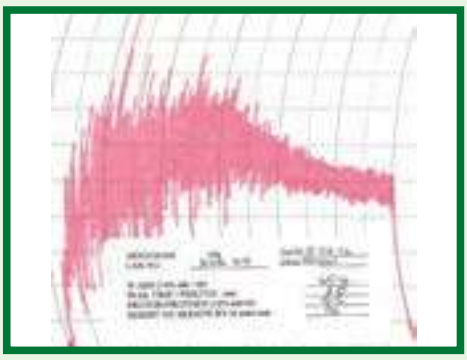
PRODUCTION REGION	(25) Free State South-Western Region				(26) Free State South-Eastern Region			
WHEAT								
	ave	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Protein (12% mb), %	13.5	11.4	15.3	1.45	13.8	11.6	15.9	3.04
Falling number, sec	349	335	379	15.27	386	348	424	53.74
1000 Kernel mass (13% mb), g	36.1	27.0	42.6	4.71	32.4	29.4	35.3	4.17
Hectolitre mass (dirty), kg/hl	81.7	77.5	85.1	2.96	79.2	78.9	79.4	0.35
Screenings (<1.8 mm sieve), %	2.17	0.34	6.48	1.95	1.66	1.01	2.30	0.91
Total damaged kernels, %	0.45	0.10	0.68	0.17	0.62	0.32	0.92	0.42
Combined deviations, %	3.21	0.90	8.40	2.41	2.78	2.67	2.88	0.15
Number of samples	***9***				***2***			
CULTIVARS								
	PAN 3161	28.0			ELANDS	42.5		
cultivars	SST 875	17.9			SST 387	23.0		
with highest %	ELANDS	12.7			PAN 3368	19.0		
occurrence	SST 884	10.6			PAN 3161	9.0		
	PAN 3118	10.0			SST 347	6.5		
Number of samples	***9***				***2***			
MIXOGRAM (Quadromat Junior)								
	ave	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Peak time, min	2.7	2.2	3.1	0.32	2.9	2.6	3.2	0.42
Tail height (6 min), mm	54	49	59	3.21	59	57	60	2.12
Number of samples	***9***				***2***			

	COMPOSITE SAMPLES											
CLASS AND GRADE	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**
BÜHLER EXTRACTION, %	72.7	74.4	-	73.1	-	-	72.3	73.7	-	-	-	-
FLOUR												
Protein (12% mb), %	12.7	10.8	-	13.7	-	-	14.6	13.7	-	-	-	-
Ash (db), %	0.58	0.62	-	0.56	-	-	0.57	0.63	-	-	-	-
Colour, KJ (wet)	-3.5	-3.8	-	-3.3	-	-	-3.3	-3.2	-	-	-	-
Colour, Minolta CM5 (dry)												
L*	93.57	93.66	-	93.16	-	-	93.42	92.99	-	-	-	-
a*	0.50	0.49	-	0.47	-	-	0.49	0.59	-	-	-	-
b*	10.11	9.71	-	9.55	-	-	10.38	10.41	-	-	-	-
RVA												
Peak Viscosity, cP	2167	2229	-	2332	-	-	2165	2313	-	-	-	-
Minimum viscosity (Through), cP	1569	1702	-	1788	-	-	1553	1618	-	-	-	-
Final Viscosity, cP	2457	2503	-	2648	-	-	2536	2652	-	-	-	-
Peak Time, min	7.00	7.00	-	7.00	-	-	7.00	7.00	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	35.1	28.8	-	38.2	-	-	41.0	36.9	-	-	-	-
Dry gluten (14% mb), %	12.2	9.6	-	13.6	-	-	14.2	13.1	-	-	-	-
Gluten Index	96	94	-	88	-	-	85	98	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	64.9	62.1	-	65.0	-	-	66.2	62.6	-	-	-	-
Development time, min	7.0	5.3	-	6.7	-	-	6.9	8.5	-	-	-	-
Stability, min	8.8	6.8	-	8.3	-	-	9.1	11.4	-	-	-	-
Mixing tolerance index, BU	26	39	-	33	-	-	24	28	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm^2	108	79	-	103	-	-	119	130	-	-	-	-
Maximum height, BU	374	308	-	312	-	-	346	436	-	-	-	-
Extensibility, mm	201	177	-	231	-	-	245	217	-	-	-	-
ALVEOGRAM												
Strength (S), cm^2	47.1	29.7	-	54.6	-	-	52.6	53.2	-	-	-	-
Stability (P), mm	103	87	-	91	-	-	105	97	-	-	-	-
Distensibility (L), mm	102	78	-	139	-	-	105	115	-	-	-	-
Configuration ratio (P/L)	1.01	1.12	-	0.65	-	-	1.00	0.84	-	-	-	-
MIXOGRAM												
Peak time, min	2.3	2.6	-	2.2	-	-	2.2	2.8	-	-	-	-
100g BAKING TEST												
Loaf volume, cm^3	1079	944	-	1162	-	-	1138	1131	-	-	-	-
Evaluation (see page 69)	0	0	-	0	-	-	0	0	-	-	-	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

25



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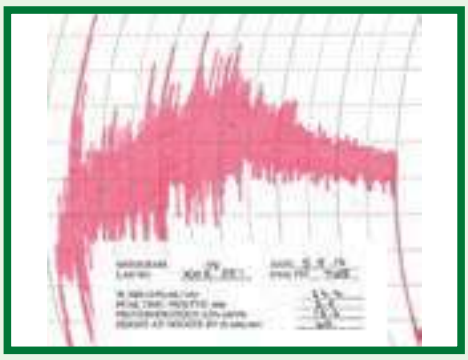
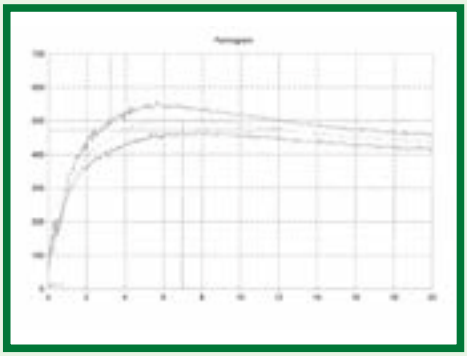


FARINOGRAM

25



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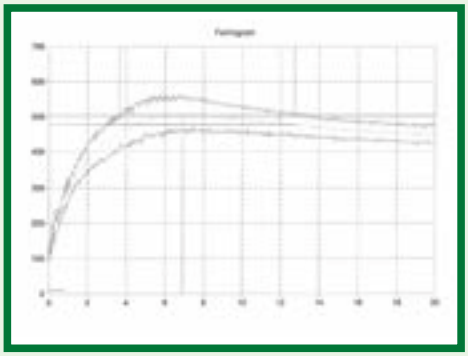
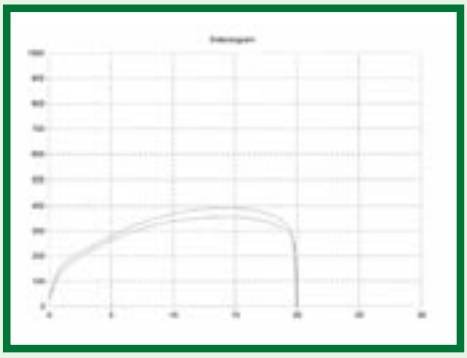


EXTENSOGRAM

25



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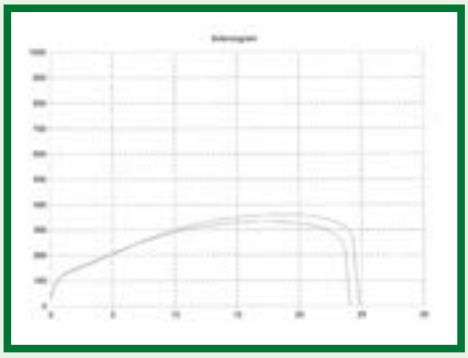
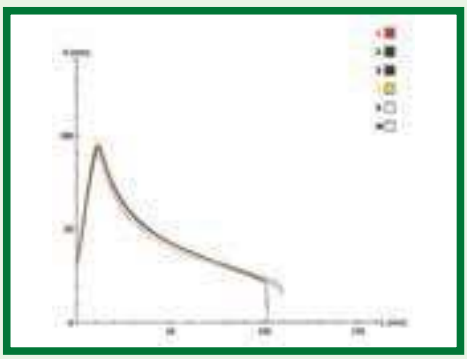
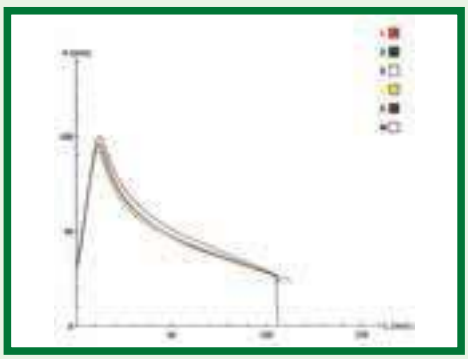


ALVEOGRAM

25



26



South African Quality data per production region

SUMMER RAINFALL AND IRRIGATION WHEAT

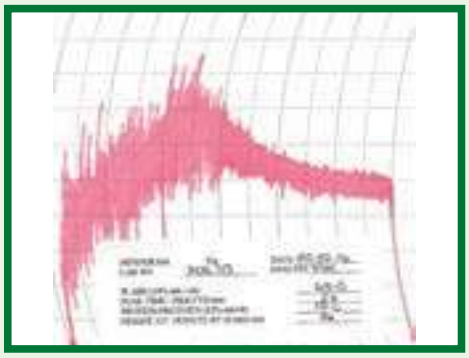
PRODUCTION REGION	(28) Free State Eastern Region				(32) Mpumalanga Western Region			
WHEAT								
	ave	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Protein (12% mb), %	13.5	11.1	15.1	1.29	13.4	12.1	14.1	1.10
Falling number, sec	379	339	419	27.25	401	367	430	31.80
1000 Kernel mass (13% mb), g	36.3	28.3	42.1	3.99	33.3	30.1	38.7	4.70
Hectolitre mass (dirty), kg/hl	81.4	76.1	84.5	2.65	80.6	77.9	83.7	2.92
Screenings (<1.8 mm sieve), %	1.32	0.10	2.38	0.69	3.83	2.26	6.07	1.99
Total damaged kernels, %	0.41	0.00	1.44	0.43	0.49	0.44	0.56	0.06
Combined deviations, %	2.37	0.28	6.06	1.73	4.70	3.02	7.13	2.16
Number of samples	***11***				***3***			
CULTIVARS								
	ELANDS	18.2			SST 835	47.3		
cultivars	SST 356	18.0			SST 875	25.3		
with highest %	SST 835	17.4			SST 884	18.3		
occurrence	SST 387	9.5			SST 843	9.0		
	SST 875	7.2			-	-		
Number of samples	***11***				***3***			
MIXOGRAM (Quadromat Junior)								
	ave	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Peak time, min	2.5	2.2	3.0	0.21	2.8	2.7	2.9	0.10
Tail height (6 min), mm	54	48	61	3.88	56	52	59	3.79
Number of samples	***11***				***3***			

	COMPOSITE SAMPLES											
CLASS AND GRADE	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**
BÜHLER EXTRACTION, %	72.9	74.8	-	-	74.3	-	75.8	-	-	73.9	-	-
FLOUR												
Protein (12% mb), %	12.8	11.9	-	-	11.8	-	11.1	-	-	13.3	-	-
Ash (db), %	0.62	0.64	-	-	0.69	-	0.64	-	-	0.70	-	-
Colour, KJ (wet)	-3.4	-3.6	-	-	-3.6	-	-3.6	-	-	-3.3	-	-
Colour, Minolta CM5 (dry)												
L*	93.56	93.75	-	-	93.59	-	93.79	-	-	93.28	-	-
a*	0.46	0.40	-	-	0.48	-	0.44	-	-	0.57	-	-
b*	9.84	8.99	-	-	9.25	-	9.17	-	-	10.06	-	-
RVA												
Peak Viscosity, cP	2224	2282	-	-	2427	-	2225	-	-	2380	-	-
Minimum viscosity (Through), cP	1601	1649	-	-	1725	-	1699	-	-	1771	-	-
Final Viscosity, cP	2560	2548	-	-	2747	-	2395	-	-	2574	-	-
Peak Time, min	7.00	7.00	-	-	7.00	-	7.00	-	-	7.00	-	-
GLUTEN												
Wet gluten (14% mb), %	34.2	32.1	-	-	32.8	-	29.6	-	-	36.4	-	-
Dry gluten (14% mb), %	11.8	11.0	-	-	10.8	-	10.2	-	-	13.2	-	-
Gluten Index	96	96	-	-	84	-	97	-	-	98	-	-
FARINOGRAM												
Water absorption (14% mb), %	63.2	62.6	-	-	59.6	-	60.3	-	-	61.7	-	-
Development time, min	6.0	5.2	-	-	4.4	-	5.2	-	-	5.7	-	-
Stability, min	6.8	6.6	-	-	4.4	-	6.1	-	-	7.5	-	-
Mixing tolerance index, BU	36	39	-	-	61	-	56	-	-	34	-	-
EXTENSOGRAM (45 min pull)												
Area, cm^2	107	93	-	-	85	-	97	-	-	135	-	-
Maximum height, BU	355	352	-	-	307	-	380	-	-	407	-	-
Extensibility, mm	213	192	-	-	192	-	182	-	-	235	-	-
ALVEOGRAM												
Strength (S), cm^2	39.1	41.4	-	-	32.5	-	33.6	-	-	42.5	-	-
Stability (P), mm	94	93	-	-	64	-	77	-	-	71	-	-
Distensibility (L), mm	95	107	-	-	157	-	107	-	-	160	-	-
Configuration ratio (P/L)	0.99	0.87	-	-	0.41	-	0.72	-	-	0.44	-	-
MIXOGRAM												
Peak time, min	2.3	2.4	-	-	2.0	-	2.6	-	-	2.2	-	-
100g BAKING TEST												
Loaf volume, cm^3	1034	1015	-	-	1038	-	1023	-	-	1141	-	-
Evaluation (see page 69)	0	0	-	-	0	-	0	-	-	0	-	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

28



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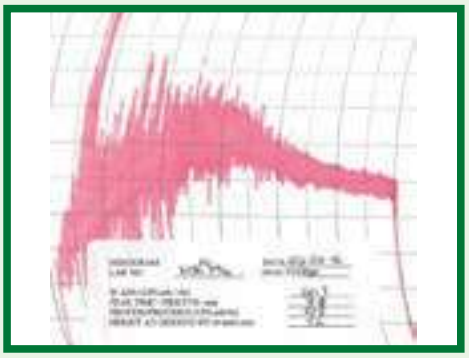
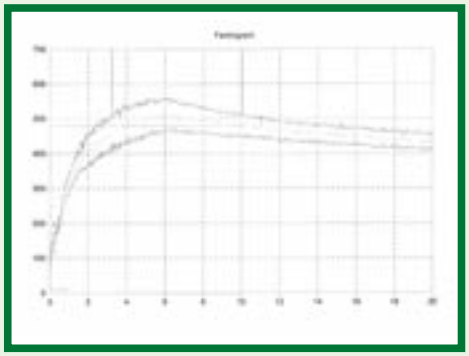


FARINOGRAM

28



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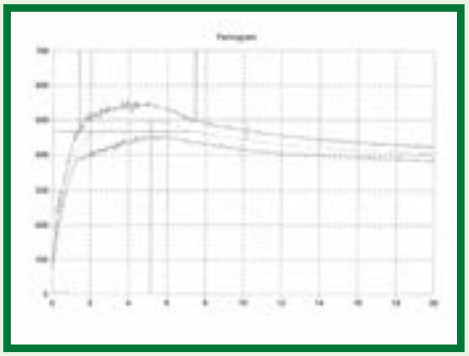
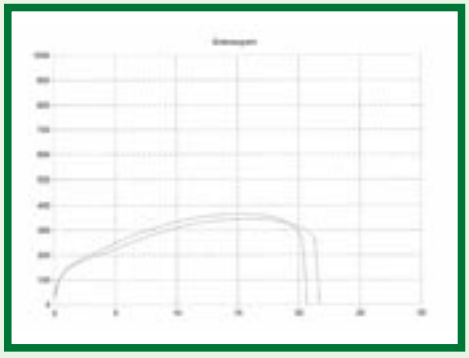


EXTENSOGRAM

28



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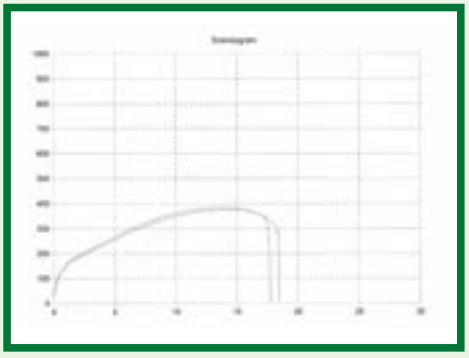
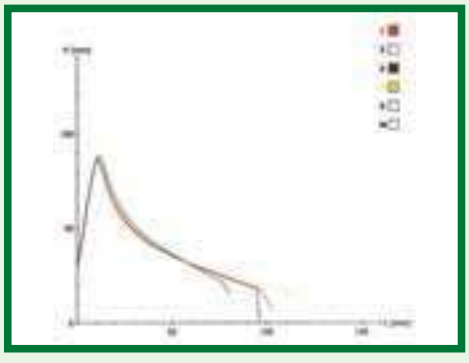


ALVEOGRAM

28



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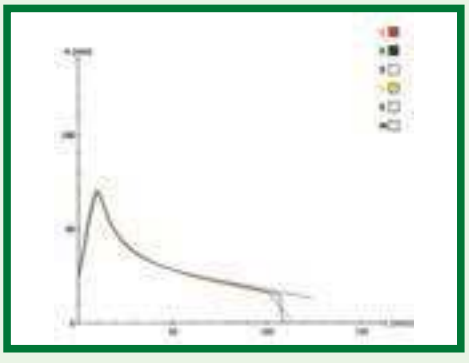


South African Quality data per production region

IRRIGATION WHEAT

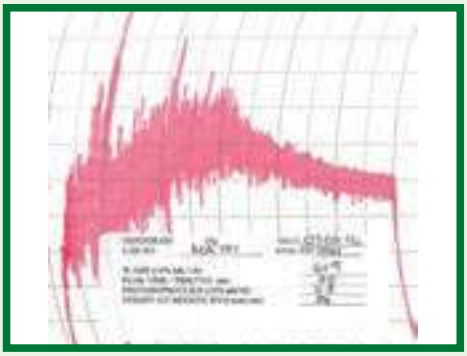
PRODUCTION REGION	(33) Mpumalanga Northern Region				(34) Gauteng			
WHEAT								
	ave	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Protein (12% mb), %	12.5	12.2	12.8	0.28	13.2	13.0	13.5	0.29
Falling number, sec	391	355	407	24.39	399	369	434	32.72
1000 Kernel mass (13% mb), g	38.6	37.6	39.5	0.90	39.3	35.9	43.2	3.68
Hectolitre mass (dirty), kg/hl	85.4	85.3	85.4	0.05	81.4	79.2	84.6	2.82
Screenings (<1.8 mm sieve), %	0.80	0.50	1.20	0.29	1.14	0.76	1.87	0.64
Total damaged kernels, %	0.21	0.10	0.26	0.08	0.63	0.32	0.78	0.27
Combined deviations, %	1.16	1.02	1.38	0.16	1.92	1.66	2.39	0.41
Number of samples	***4***				***3***			
CULTIVARS								
	SST 884	45.3			SST 884	40.0		
cultivars	SST 843	19.5			SST 875	35.3		
with highest %	SST 875	10.0			SST 835	16.0		
occurrence	DUZI	9.8			SST 806	8.7		
	SST 835	6.3			-	-		
Number of samples	***4***				***3***			
MIXOGRAM (Quadromat Junior)								
	ave	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Peak time, min	3.0	2.9	3.1	0.10	2.7	2.3	3.1	0.40
Tail height (6 min), mm	53	52	54	0.96	52	49	54	2.52
Number of samples	***4***				***3***			

	COMPOSITE SAMPLES											
CLASS AND GRADE	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**
BÜHLER EXTRACTION, %	74.6	-	-	-	-	-	74.9	-	-	-	-	-
FLOUR												
Protein (12% mb), %	11.6	-	-	-	-	-	12.4	-	-	-	-	-
Ash (db), %	0.60	-	-	-	-	-	0.60	-	-	-	-	-
Colour, KJ (wet)	-3.7	-	-	-	-	-	-3.4	-	-	-	-	-
Colour, Minolta CM5 (dry)												
L*	93.64	-	-	-	-	-	93.68	-	-	-	-	-
a*	0.51	-	-	-	-	-	0.46	-	-	-	-	-
b*	9.34	-	-	-	-	-	9.41	-	-	-	-	-
RVA												
Peak Viscosity, cP	2289	-	-	-	-	-	2320	-	-	-	-	-
Minimum viscosity (Through), cP	1674	-	-	-	-	-	1780	-	-	-	-	-
Final Viscosity, cP	2552	-	-	-	-	-	2463	-	-	-	-	-
Peak Time, min	7.00	-	-	-	-	-	7.00	-	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	30.0	-	-	-	-	-	34.0	-	-	-	-	-
Dry gluten (14% mb), %	10.4	-	-	-	-	-	11.6	-	-	-	-	-
Gluten Index	97	-	-	-	-	-	93	-	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	61.1	-	-	-	-	-	61.8	-	-	-	-	-
Development time, min	7.0	-	-	-	-	-	5.5	-	-	-	-	-
Stability, min	9.1	-	-	-	-	-	7.7	-	-	-	-	-
Mixing tolerance index, BU	34	-	-	-	-	-	33	-	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm^2	117	-	-	-	-	-	91	-	-	-	-	-
Maximum height, BU	427	-	-	-	-	-	347	-	-	-	-	-
Extensibility, mm	197	-	-	-	-	-	188	-	-	-	-	-
ALVEOGRAM												
Strength (S), cm^2	45.7	-	-	-	-	-	43.7	-	-	-	-	-
Stability (P), mm	96	-	-	-	-	-	81	-	-	-	-	-
Distensibility (L), mm	104	-	-	-	-	-	133	-	-	-	-	-
Configuration ratio (P/L)	0.92	-	-	-	-	-	0.61	-	-	-	-	-
MIXOGRAM												
Peak time, min	2.9	-	-	-	-	-	2.4	-	-	-	-	-
100g BAKING TEST												
Loaf volume, cm^3	1005	-	-	-	-	-	1053	-	-	-	-	-
Evaluation (see page 69)	0	-	-	-	-	-	0	-	-	-	-	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

33



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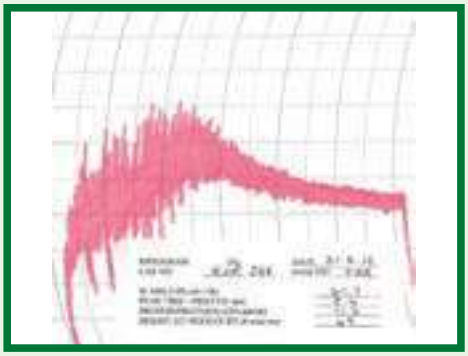
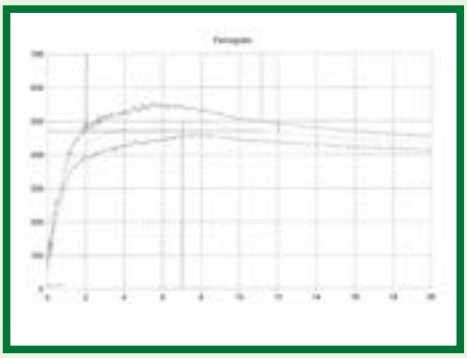


FARINOGRAM

33



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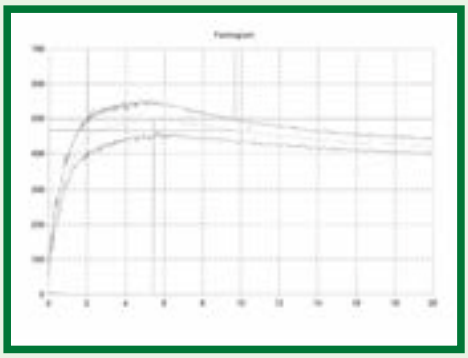
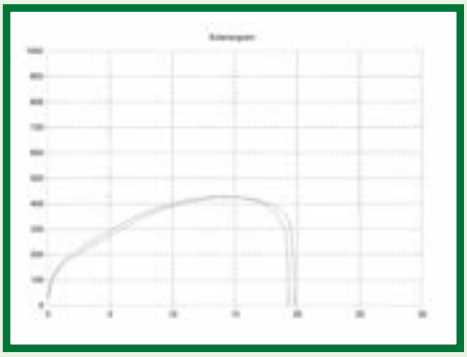


EXTENSOGRAM

33



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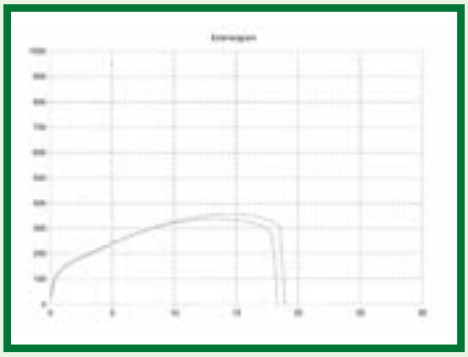
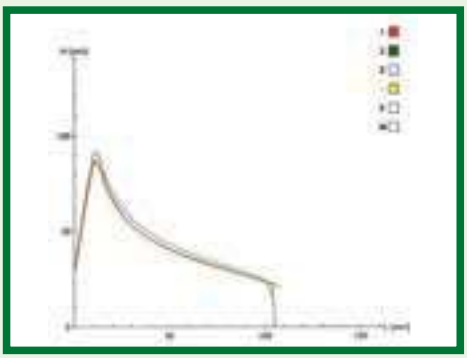


ALVEOGRAM

33



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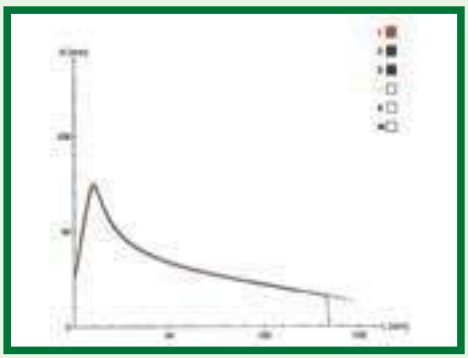


South African Quality data per production region

IRRIGATION WHEAT

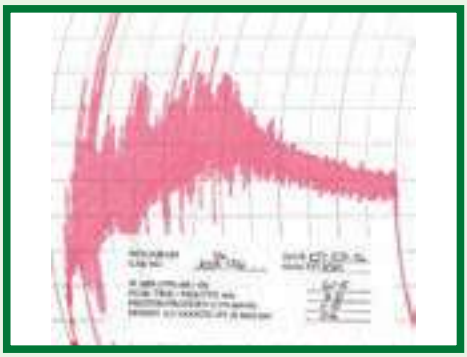
PRODUCTION REGION	(35) Limpopo Region				(36) Kwazulu-Natal			
WHEAT								
	ave	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Protein (12% mb), %	12.1	10.7	13.3	0.85	13.6	12.0	14.4	0.70
Falling number, sec	401	337	548	55.27	429	305	487	54.67
1000 Kernel mass (13% mb), g	38.5	30.4	45.2	4.25	37.3	35.3	40.6	1.58
Hectolitre mass (dirty), kg/hl	82.3	76.7	85.4	2.52	84.0	82.9	85.4	0.77
Screenings (<1.8 mm sieve), %	1.13	0.12	2.78	0.78	0.49	0.16	1.29	0.42
Total damaged kernels, %	0.74	0.00	2.00	0.55	0.44	0.08	1.58	0.50
Combined deviations, %	2.46	0.87	4.38	1.22	1.10	0.48	2.62	0.79
Number of samples	***11***				***9***			
CULTIVARS								
	SST 884	47.1			SST 835	34.8		
cultivars	DUZI	14.0			SST 875	28.4		
with highest %	SST 835	9.5			SST 884	21.3		
occurrence	SST 843	9.5			PAN 3471	6.9		
	SST 875	7.5			SST 843	6.2		
Number of samples	***11***				***9***			
MIXOGRAM (Quadromat Junior)								
	ave	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Peak time, min	3.1	2.3	3.9	0.54	2.9	2.5	3.4	0.35
Tail height (6 min), mm	55	50	58	2.96	54	51	59	2.65
Number of samples	***11***				***9***			

	COMPOSITE SAMPLES											
CLASS AND GRADE	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**
BÜHLER EXTRACTION, %	73.6	74.0	73.5	-	74.0	-	75.7	-	-	-	-	-
FLOUR												
Protein (12% mb), %	11.8	11.5	9.7	-	11.3	-	12.7	-	-	-	-	-
Ash (db), %	0.61	0.73	0.59	-	0.69	-	0.64	-	-	-	-	-
Colour, KJ (wet)	-3.7	-3.0	-3.5	-	-3.4	-	-3.4	-	-	-	-	-
Colour, Minolta CM5 (dry)												
L*	93.81	93.41	93.40	-	93.33	-	93.61	-	-	-	-	-
a*	0.45	0.53	0.38	-	0.50	-	0.53	-	-	-	-	-
b*	9.05	9.62	10.24	-	9.74	-	9.29	-	-	-	-	-
RVA												
Peak Viscosity, cP	2363	1939	2347	-	2409	-	2219	-	-	-	-	-
Minimum viscosity (Through), cP	1795	1481	1767	-	1746	-	1698	-	-	-	-	-
Final Viscosity, cP	2569	2081	2578	-	2681	-	2319	-	-	-	-	-
Peak Time, min	7.00	7.00	7.00	-	7.00	-	7.00	-	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	31.2	30.1	25.4	-	30.3	-	34.8	-	-	-	-	-
Dry gluten (14% mb), %	10.8	10.3	8.7	-	10.1	-	12.0	-	-	-	-	-
Gluten Index	97	96	98	-	96	-	94	-	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	60.6	60.0	61.4	-	60.2	-	61.4	-	-	-	-	-
Development time, min	6.0	5.7	7.5	-	5.3	-	5.9	-	-	-	-	-
Stability, min	8.7	6.6	12.5	-	8.8	-	7.1	-	-	-	-	-
Mixing tolerance index, BU	34	48	22	-	25	-	46	-	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm^2	133	91	111	-	108	-	144	-	-	-	-	-
Maximum height, BU	481	362	478	-	429	-	424	-	-	-	-	-
Extensibility, mm	204	181	171	-	183	-	243	-	-	-	-	-
ALVEOGRAM												
Strength (S), cm^2	42.7	32.0	44.2	-	36.4	-	40.3	-	-	-	-	-
Stability (P), mm	89	74	112	-	87	-	72	-	-	-	-	-
Distensibility (L), mm	108	103	83	-	92	-	148	-	-	-	-	-
Configuration ratio (P/L)	0.82	0.72	1.35	-	0.95	-	0.49	-	-	-	-	-
MIXOGRAM												
Peak time, min	2.8	3.0	3.3	-	2.8	-	2.4	-	-	-	-	-
100g BAKING TEST												
Loaf volume, cm^3	1020	994	855	-	997	-	1133	-	-	-	-	-
Evaluation (see page 69)	0	0	0	-	0	-	0	-	-	-	-	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

35



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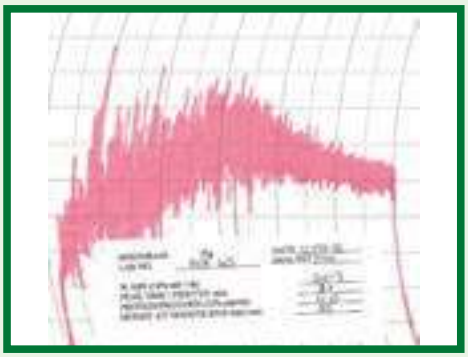
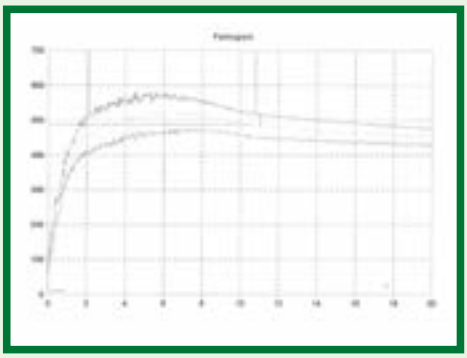


FARINOGRAM

35



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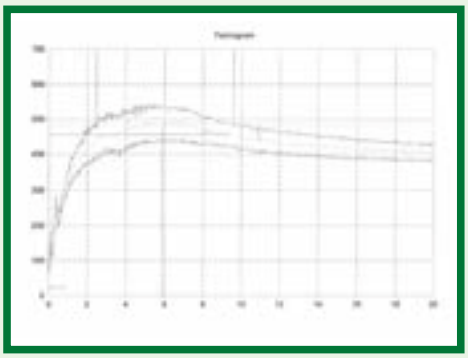
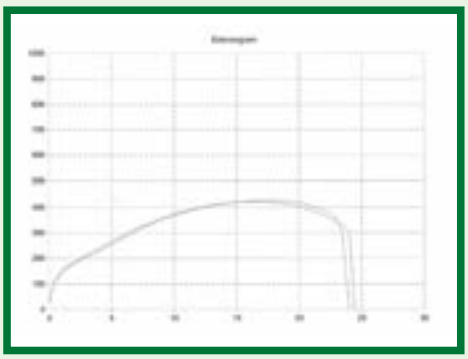


EXTENSOGRAM

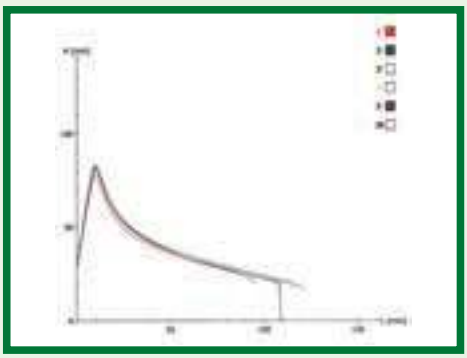
35

36



ALVEOGRAM

35



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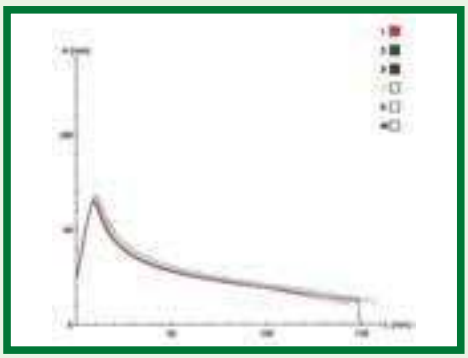


Mycotoxins

Global trends in the occurrence and concentration levels of mycotoxins are summarised in the Annual BIOMIN Mycotoxin Survey report of 2015. A total number of 8 271 agricultural commodity samples from 75 countries were analysed. These samples included maize, wheat, soybean meal, dried distillers grains and silage amongst others. Wheat represented approximately 700 samples and of these, 68% of the samples were contaminated with Deoxinyvalenol (DON), 37% with Zearalenone (ZON), 22% T-2, 16% Aflatoxin (Afla), 14% Fumonisin (FUM) and 12% Ochratoxin A (OTA). The average of the positive DON results on 770 wheat samples was 960 µg/kg (ppb) with the highest level tested 15 976 µg/kg. Samples from South Africa (not only wheat), showed 6% Afla, 94% ZON, 86% DON and 76% FUM contamination and none with T-2 or Ochratoxin A. Overall worldwide, DON constitutes the most frequent threat to feed commodities followed by ZON and FUM.[1]

Constant monitoring and continued research on the prevention and mitigation of mycotoxin contamination are necessary. 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.

National Mycotoxin Regulations

According to the Foodstuffs, Cosmetics and Disinfectants Act (Act 54 of 1972) and regulations published under Government Notice No. R. 1145, dated 8 October 2004, all foodstuffs, ready for human consumption, may not contain more than 10 µg/kg of aflatoxin, of which aflatoxin B1 may not exceed 5 µg/kg.

Amendments to Government Notice No. R. 1145, dated 8 October 2004, recently published under Government Notice NO. 987 of 05 September 2016, specify that

- Cereal grains (wheat, maize and barley) intended for further processing, may not contain more than 2 000 µg/kg of Deoxinyvalenol.
- Flour, meal, semolina and flakes derived from wheat, maize or barley, ready for human consumption, may not contain more than 1 000 µg/kg of Deoxinyvalenol.

Further processing means any other treatment or processing method that has been proven to reduce levels of fungus produced toxins in foodstuffs intended for human consumption.

International Mycotoxin Regulations

The Maximum, advisory and guidance levels for mycotoxins on maize, maize products and cereals from the European Union, USA, China and Codex are provided below for comparison purposes.

The European Union specifies the following maximum levels for mycotoxins on cereals and specifically wheat:

Aflatoxins

- All cereals and all products derived from cereals, including processed cereal products, with the exception of maize, rice, processed cereal-based foods for infants and young children and dietary foods for special medical purposes intended specifically for infants, $B_1 \leq 2.0$ µg/kg.
- All cereals and all products derived from cereals, including processed cereal products, with the exception of maize, rice, processed cereal-based foods for infants and young children and dietary foods for special medical purposes intended specifically for infants, sum of $B_1 + B_2 + G_1 + G_2 \leq 40$ µg/kg.

Ochratoxin A

- Unprocessed cereals, ≤ 5.0 µg/kg.
- All products derived from unprocessed cereals, including processed cereal products and cereals intended for direct human consumption with certain exceptions (see full regulation), ≤ 3.0 µg/kg.

Deoxynivalenol

- Unprocessed cereals other than durum wheat, oats and maize, ≤ 1 250 µg/kg.
- Cereals intended for direct human consumption, cereal flour, bran and germ as end product marketed for direct human consumption, with the certain exceptions (see full regulation) ≤ 750 µg/kg.
- Bread (including small bakery wares), pastries, biscuits, cereal snacks and breakfast cereals, ≤ 500 µg/kg.

Zearalenone

- Unprocessed cereals other than maize ≤ 100 µg/kg.
- Cereals intended for direct human consumption, cereal flour, bran and germ as end product marketed for direct human consumption and the germ with the certain exceptions (see full regulation) ≤ 75 µg/kg.
- Bread (including small bakery wares), pastries, biscuits, cereal snacks and breakfast cereals, excluding maize-snacks and maize-based breakfast cereals, ≤ 50 µg/kg. [(2)]

T-2 and HT-2 toxin

- Unprocessed cereal – wheat, rye and other cereal, indicative level 100 µg/kg.
- Cereal grains for direct human consumption – cereals other than oats and maize, indicative level 50 µg/kg.
- Cereal products for human consumption – cereal milling products other than oat and maize, indicative level 50 µg/kg.
- Cereal products for human consumption – breakfast cereals including formed cereal flakes, indicative level 75 µg/kg.
- Cereal products for human consumption – bread (including small bakery wares), pastries, biscuits, cereal snacks, pasta, indicative level 25 µg/kg.
- Cereal products for human consumption – cereal-based foods for infants and young children, indicative level 15 µg/kg. [(3)]

In the USA, the Food and Drug Administration (FDA) actions levels for Aflatoxin for all commodities intended for human consumption is 20 µg/kg (excluding Aflatoxin M1 in milk where the maximum level is 0.5 µg/kg). Advisory maximum levels for DON in finished wheat products intended for human consumption is 1 000 µg/kg. [(4)]

In China the maximum level for Aflatoxin B_1 in wheat is 5.0 µg/kg. The maximum level for DON in cereals and their product including wheat and wheatmeal is 1 000 µg/kg. Ochratoxin A in cereals and processed products of milled grains may not exceed 5.0 µg/kg and Zearalenone in wheat flour may not exceed 60 µg/kg. [(5)]

According to Codex, Ochratoxin A in raw wheat may not exceed 5 µg/kg and the proposed maximum level for DON is 2 mg/kg in raw wheat and 1 mg/kg in flour, semolina, meal and flakes derived from wheat. [(6)]

References:

1. BIOMIN Mycotoxin Annual Report 2015. www.biomin.net.
2. COMMISSION REGULATION (EC) No 1881/226 of 19 December 2006 setting maximum levels for certain contaminants in foodstuffs.
3. COMMISSION RECOMMENDATION of 27 March 2013 on the presence of T-2 and HT-2 toxin in cereals and cereal products.
4. FDA Mycotoxin Regulatory Guidance, A Guide for Grain Elevators, Feed Manufacturers, Grain Processors and Exporters, August 2011.
5. National Food Safety Standard, Maximum Levels of Mycotoxins in Foods, GB 2761-2011.
6. CODEX General Standard for contaminants and toxins in food and feed, CODEX STAN 193-1995, Revised in 1997, 2006, 2008, 2009, Amended 2009.

Table 6: Mycotoxin results for the 2015/2016 season

Region	Class and Grade	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)
		G_1	B_1	G_2	B_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	20 µg/kg
2	UT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2	B1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3	B1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3	B3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3	B2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3	B4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4	B3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4	B1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
5	B2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
5	B4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
5	B1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
6	UT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
6	B1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
6	B2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
10	B2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
10	B4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
10	B1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
11	B1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
12	B1	ND	ND	ND	ND	ND	ND	ND	383	ND	ND	ND	ND	ND
14	UT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
14	B2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
15	B1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
19	B2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
19	B1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
20	B1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
21	B1	ND	ND	ND	ND	ND	ND	ND	490	ND	ND	ND	ND	ND
22	B2	ND	ND	ND	ND	ND	ND	ND	<100	ND	ND	ND	ND	ND
23	B1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
24	B1	ND	ND	ND	ND	ND	ND	ND	122	ND	ND	ND	ND	ND
24	B3	ND	ND	ND	ND	ND	ND	ND	593	ND	ND	ND	ND	ND

Table 6: Mycotoxin results for the 2015/2016 season (continue)

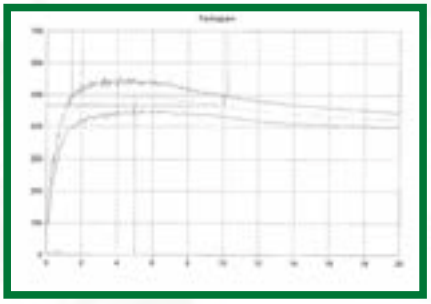
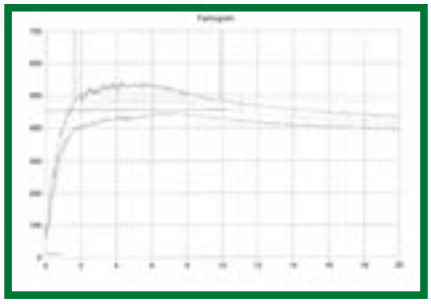
Region	Class and Grade	Aflatoxin (µg/kg)				Fumonisin (µg/kg)			Deoxynivalenol (µg/kg)	15-ADON (µg/kg)	Ochratoxin A (µg/kg)	Zearalenone (µg/kg)	HT-2 Toxin (µg/kg)	T-2 Toxin (µg/kg)
		G_1	B_1	G_2	B_2	B_1	B_2	B_3						
		LOQ												
		5 µg/kg	5 µg/kg	5 µg/kg	5 µg/kg	20 µg/kg	20 µg/kg	20 µg/kg	100 µg/kg	100 µg/kg	5 µg/kg	20 µg/kg	20 µg/kg	20 µg/kg
25	B1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
26	B1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
28	B2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
28	B1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
32	B4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
33	B1	ND	ND	ND	ND	ND	ND	ND	<100	ND	ND	ND	ND	ND
34	B1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
35	B1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
35	B2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
36	B1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total number of samples		40	40	40	40	40	40	40	40	40	40	40	40	40
Average of total number of samples		0	0	0	0	0	0	0	40	0	0	0	0	0
Number of positive results		0	0	0	0	0	0	0	4	0	0	0	0	0
Average of positive results		-	-	-	-	-	-	-	397	-	-	-	-	-
Maximum of positive results		-	-	-	-	-	-	-	593	-	-	-	-	-

Note:

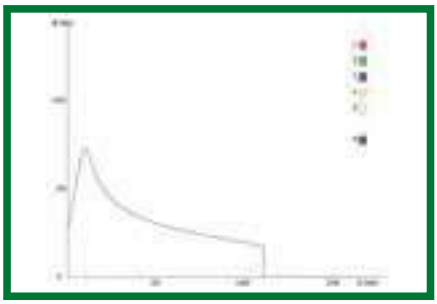
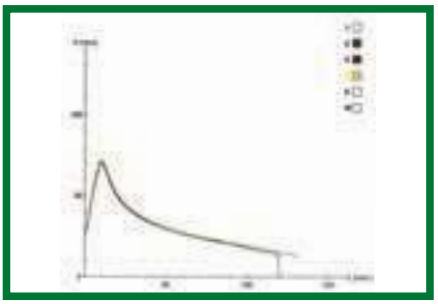
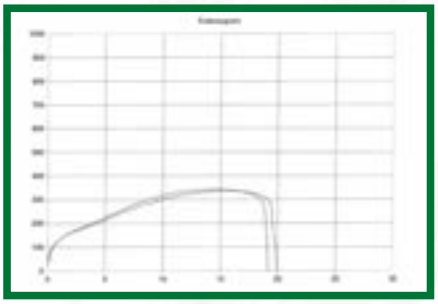
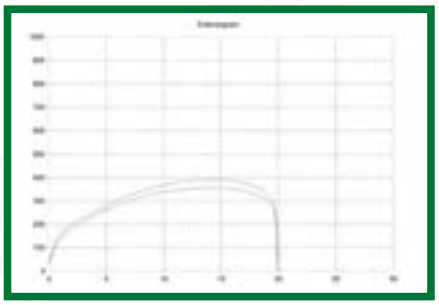
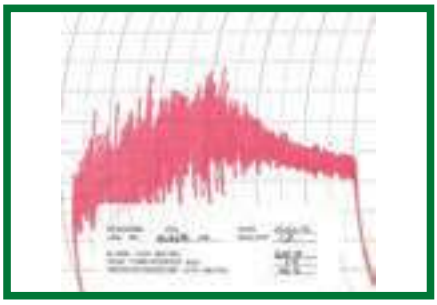
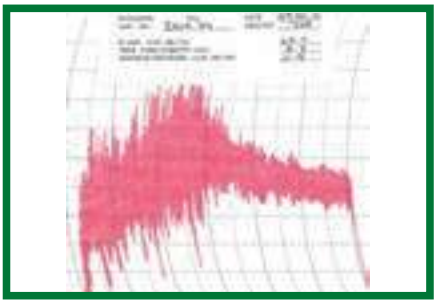
- Limit of quantitation (LOQ) means the lowest concentration level that can be quantified with acceptable presicion and accuracy by the LCMSMS. A concentration measured below the LOQ is reported as <LOQ.
- Limit of detection (LOD) is the lowest concentration level that can be detected but not quantified 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)

RSA WHEAT CROP QUALITY SUMMARY

RSA Crop Quality 2013/2014 and 2015/2016 Seasons

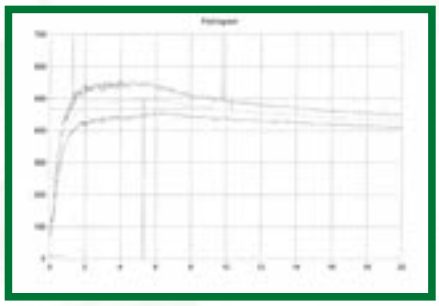
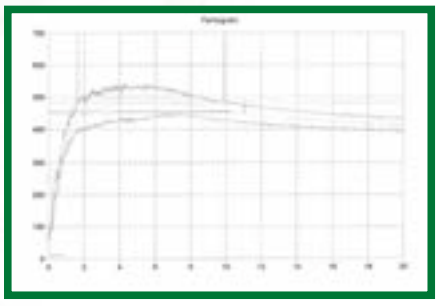
Country of origin	RSA Crop Average 2013/2014							RSA Crop Average 2015/2016						
Class and Grade bread wheat	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**Average**	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**Average**
No. of samples	**93**	**74**	**70**	**47**	**43**	**13**	**340**	***124***	***56***	***18***	***11***	***39***	***4***	***252***
WHEAT														
GRADING														
Protein (12% mb), %	12.90	11.49	10.62	9.77	12.06	12.80	11.58	13.34	11.68	11.16	13.27	13.02	14.90	12.79
Moisture, %	11.5	11.4	11.3	11.3	11.6	11.6	11.4	10.3	10.8	10.9	10.6	10.6	10.4	10.5
Falling number, sec	344	350	349	344	322	163	337	401	391	367	405	383	375	393
1000 Kernel mass (13% mb), g	38.3	40.6	40.3	39.7	37.3	38.4	39.3	36.3	39.4	39.3	34.6	34.9	30.6	36.8
Hlm (dirty), kg/hl	80.4	80.4	79.4	78.7	78.5	76.4	79.5	82.3	81.6	80.2	79.3	78.6	73.8	81.1
Screenings (<1.8 mm sieve), %	1.25	1.19	1.43	1.88	2.56	2.58	1.58	1.33	1.36	1.28	2.73	3.05	4.47	1.71
Gravel, stones, turf and glass, %	0.01	0.01	0.00	0.00	0.00	0.07	0.01	0.00	0.01	0.01	0.00	0.01	0.20	0.01
Foreign matter, %	0.14	0.16	0.22	0.18	0.37	0.38	0.20	0.09	0.11	0.13	0.18	0.30	0.58	0.14
Other grain & unthreshed ears, %	0.30	0.35	0.47	0.40	0.77	0.67	0.43	0.41	0.41	0.43	0.47	1.36	2.16	0.59
Heat damaged kernels, %	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Immature kernels, %	0.11	0.05	0.03	0.02	0.19	0.12	0.08	0.08	0.06	0.03	0.10	0.04	0.12	0.06
Insect damaged kernels, %	0.18	0.18	0.13	0.10	0.20	0.16	0.16	0.34	0.43	0.56	0.37	0.78	2.16	0.47
Heavily frost damaged kernels, %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.05	0.00	0.01
Sprouted kernels, %	0.14	0.08	0.09	0.04	0.31	2.02	0.20	0.02	0.01	0.00	0.02	0.01	0.02	0.02
Total damaged kernels, %	0.43	0.31	0.26	0.17	0.71	2.32	0.44	0.44	0.51	0.59	0.49	0.83	2.30	0.56
Combined deviations, %	2.12	2.00	2.28	2.59	4.29	5.95	2.61	2.26	2.38	2.43	3.87	5.54	9.51	2.99
Field fungi, %	0.10	0.07	0.06	0.05	0.12	0.07	0.08	0.09	0.09	0.12	0.28	0.06	0.06	0.10
Storage fungi, %	0.03	0.02	0.01	0.01	0.02	0.10	0.02	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	0.00	0.00
Noxious seeds (*Crotalaria spp., etc.*)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Noxious seeds (*Argemone mexicana, etc.*)	0	0	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	No	No
Undesirable odour	No	No	No	No	No	No	No	No	No	No	No	No	No	No
	B1	**B2**	**B3**	**B4**	**UT**	**COW**	**Average**	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**Average**
No. of samples	***23***	***18***	***11***	***8***	***8***	***2***	***70***	***25***	***19***	***9***	***8***	***9***	***-***	***70***
BÜHLER EXTRACTION, %	73.0	73.5	73.8	73.1	72.8	70.9	73.2	73.7	73.8	73.2	73.0	72.4	-	73.4
FLOUR														
Colour, KJ (wet)	-2.8	-2.9	-3.1	-3.1	-2.8	-2.3	-2.9	-3.6	-3.6	-3.3	-3.5	-3.4	-	-3.5
Colour, Minolta CM5 (dry)														
L*	93.88	94.01	94.16	94.10	93.97	93.62	93.99	93.79	93.80	93.68	93.76	93.85	-	93.78
a*	0.42	0.41	0.36	0.37	0.38	0.34	0.40	0.49	0.47	0.42	0.47	0.47	-	0.47
b*	9.40	9.38	9.54	9.92	9.60	9.65	9.50	9.73	9.66	9.83	9.74	9.90	-	9.75
Protein (12% mb), %	11.8	10.5	9.7	8.9	10.9	12.9	10.7	12.4	11.2	10.9	11.9	12.0	-	11.8
Wet Gluten (14% mb), %	32.5	29.2	27.6	23.1	29.9	36.6	29.5	33.8	30.1	29.3	32.2	32.4	-	31.9
Dry Gluten (14% mb), %	11.5	10.1	9.9	8.1	10.5	12.9	10.4	11.8	10.4	9.7	11.2	11.1	-	11.0
Gluten Index	87	86	83	83	90	93	86	95	95	95	95	94	-	95
100g BAKING TEST														
Baking water absorption, %	61.6	60.2	59.3	58.7	60.8	62.7	60.5	62.5	61.1	60.7	62.1	62.3	-	61.8
Loaf volume, cm^3	917	854	820	764	886	1034	868	1097	1012	985	1029	1060	-	1047
Evaluation	0	0	0	0	0	0	0	0	0	0	1	0	-	0
FARINOGRAM														
Water absorption, %	61.6	60.2	58.9	57.6	59.8	60.4	60.1	61.4	60.8	59.6	60.6	60.5	-	60.8
Development time, min	6.5	5.1	4.2	3.0	5.1	5.7	5.2	6.2	5.3	5.7	5.8	5.9	-	5.8
Stability, mm	9.7	7.4	6.3	6.1	8.1	8.8	8.0	8.4	7.2	8.1	8.1	8.5	-	8.0
Mixing tolerance index, BU	34	39	43	41	37	37	38	37	39	38	39	36	-	38
														

RSA Crop Quality of 2013/2014 and 2015/2016 Seasons

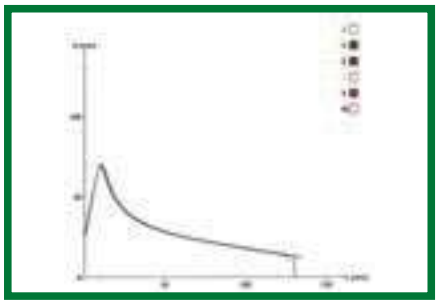
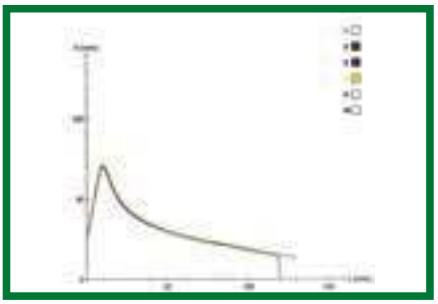
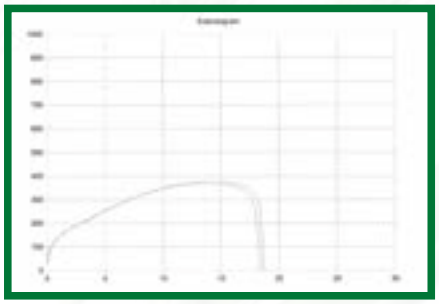
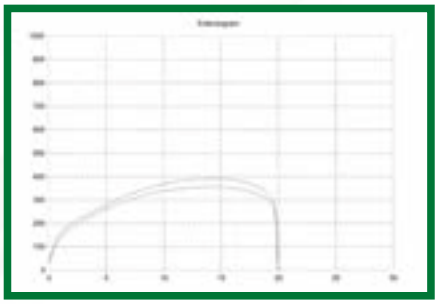
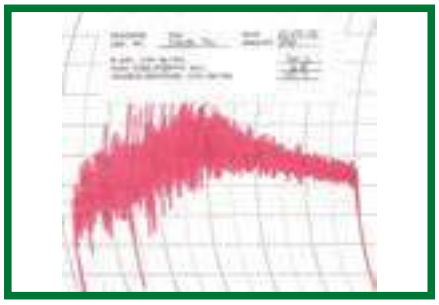
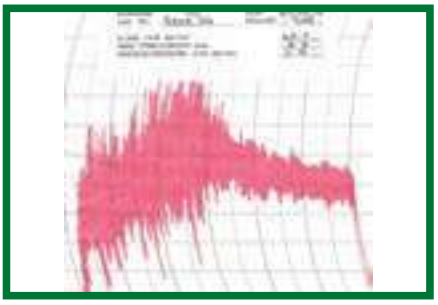
Country of origin	RSA Crop Average 2013/2014							RSA Crop Average 2015/2016						
Class and Grade bread wheat	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**Average**	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**Average**
No. of samples	**23**	**18**	**11**	**8**	**8**	**2**	**70**	***25***	***19***	***9***	***8***	***9***	***-***	***70***
ALVEOGRAM														
Strength (S), cm²	44.7	35.8	30.1	27.4	39.8	45.7	37.6	41.5	35.6	33.6	39.8	38.1	-	38.3
Stability (P), mm	87	80	72	74	79	71	80	83	83	78	78	79	-	81
Distensibility (L), mm	122	113	110	94	125	156	116	120	104	108	127	117	-	115
P/L	0.75	0.74	0.69	0.91	0.69	0.47	0.74	0.72	0.82	0.81	0.65	0.71	-	0.75
														
EXTENSOGRAM														
Strength, cm²	110	85	71	72	99	129	92	114	94	100	111	105	-	105
Max. height, BU	374	325	284	317	364	425	341	395	357	365	367	359	-	373
Extensibility, mm	215	188	175	162	194	225	194	207	186	187	207	204	-	198
														
MIXOGRAM														
Peak time, min	2.8	2.7	2.7	3.0	3.0	2.9	2.8	2.5	2.6	2.7	2.5	2.6	-	2.6
Absorption, %	61.9	60.4	59.5	58.8	61.0	63.4	60.7	62.8	61.2	61.0	62.4	62.3	-	62.0
														
MYCOTOXINS														
Afla G_1 (µg/kg)	ND							ND						
Afla B_1 (µg/kg)	ND							ND						
Afla G_2 (µg/kg)	ND							ND						
Afla B_2 (µg/kg)	ND							ND						
Fum B_1 (µg/kg)	ND							ND						
Fum B_2 (µg/kg)	ND							ND						
Fum B_3 (µg/kg)	ND							ND						
Deoxynivalenol (µg/kg) [max. value]	<100 [151]							<100 [593]						
Ochratoxin A (µg/kg)	ND							ND						
Zearalenone (µg/kg)	ND							ND						
T-2 Toxin (µg/kg)	ND							ND						
No. of samples	***40***							***40***						

RSA WHEAT CROP QUALITY SUMMARY

RSA Crop Quality 2014/2015 and 2015/2016 Seasons

Country of origin	RSA Crop Average 2014/2015							RSA Crop Average 2015/2016						
Class and Grade bread wheat	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**Average**	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**Average**
No. of samples	***105***	***59***	***42***	***17***	***89***	***25***	***337***	***124***	***56***	***18***	***11***	***39***	***4***	***252***
WHEAT														
GRADING														
Protein (12% mb), %	12.91	11.53	10.78	9.68	11.51	11.35	11.75	13.34	11.68	11.16	13.27	13.02	14.90	12.79
Moisture, %	11.0	11.1	11.1	12.3	11.2	11.3	11.2	10.3	10.8	10.9	10.6	10.6	10.4	10.5
Falling number, sec	364	369	375	375	369	364	368	401	391	367	405	383	375	393
1000 Kernel mass (13% mb), g	38.0	39.6	40.3	41.9	38.2	38.2	38.8	36.3	39.4	39.3	34.6	34.9	30.6	36.8
Hlm (dirty), kg/hl	80.9	80.7	80.6	81.0	79.1	78.6	80.2	82.3	81.6	80.2	79.3	78.6	73.8	81.1
Screenings (<1.8 mm sieve), %	1.17	1.26	1.32	1.42	2.19	2.01	1.55	1.33	1.36	1.28	2.73	3.05	4.47	1.71
Gravel, stones, turf and glass, %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.20	0.01
Foreign matter, %	0.09	0.07	0.09	0.07	0.18	0.12	0.11	0.09	0.11	0.13	0.18	0.30	0.58	0.14
Other grain & unthreshed ears, %	0.42	0.44	0.43	0.38	0.98	0.58	0.58	0.41	0.41	0.43	0.47	1.36	2.16	0.59
Heat damaged kernels, %	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Immature kernels, %	0.13	0.05	0.05	0.04	0.10	0.03	0.09	0.08	0.06	0.03	0.10	0.04	0.12	0.06
Insect damaged kernels, %	0.44	0.71	0.76	0.85	1.71	1.22	0.94	0.34	0.43	0.56	0.37	0.78	2.16	0.47
Heavily frost damaged kernels, %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.05	0.00	0.01
Sprouted kernels, %	0.04	0.04	0.04	0.10	0.10	0.08	0.06	0.02	0.01	0.00	0.02	0.01	0.02	0.02
Total damaged kernels, %	0.62	0.79	0.85	0.99	1.92	1.34	1.09	0.44	0.51	0.59	0.49	0.83	2.30	0.56
Combined deviations, %	2.29	2.57	2.69	2.86	5.27	4.05	3.34	2.26	2.38	2.43	3.87	5.54	9.51	2.99
Field fungi, %	0.23	0.16	0.09	0.06	0.11	1.76	0.27	0.09	0.09	0.12	0.28	0.06	0.06	0.10
Storage fungi, %	0.01	0.01	0.00	0.00	0.01	0.00	0.01	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	0.00	0.00
Noxious seeds (*Crotalaria spp., etc.*)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Noxious seeds (*Argemone mexicana, etc.*)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Live insects	No	No	No	No	No	Yes	No	No	No	No	No	No	No	No
Undesirable odour	No	No	No	No	No	No	No	No	No	No	No	No	No	No
	B1	**B2**	**B3**	**B4**	**UT**	**COW**	**Average**	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**Average**
No. of samples	***24***	***15***	***15***	***6***	***9***	***1***	***70***	***25***	***19***	***9***	***8***	***9***	***-***	***70***
BÜHLER EXTRACTION, %	73.5	73.6	73.3	73.9	72.8	70.9	73.4	73.7	73.8	73.2	73.0	72.4	-	73.4
FLOUR														
Colour, KJ (wet)	-3.3	-3.3	-3.5	-3.7	-3.2	-2.2	-3.3	-3.6	-3.6	-3.3	-3.5	-3.4	-	-3.5
Colour, Minolta CM5 (dry)														
L*	93.66	93.72	93.93	94.07	93.77	92.98	93.77	93.79	93.80	93.68	93.76	93.85	-	93.78
a*	0.47	0.45	0.41	0.39	0.41	0.56	0.44	0.49	0.47	0.42	0.47	0.47	-	0.47
b*	9.58	9.81	9.87	9.49	9.82	9.78	9.72	9.73	9.66	9.83	9.74	9.90	-	9.75
Protein (12% mb), %	11.9	10.5	9.7	8.9	10.9	10.9	10.7	12.4	11.2	10.9	11.9	12.0	-	11.8
Wet Gluten (14% mb), %	31.8	28.9	25.7	24.1	30.2	27.2	28.9	33.8	30.1	29.3	32.2	32.4	-	31.9
Dry Gluten (14% mb), %	10.8	9.7	8.6	8.3	10.4	9.2	9.8	11.8	10.4	9.7	11.2	11.1	-	11.0
Gluten Index	88	86	88	90	86	94	88	95	95	95	95	94	-	95
100g BAKING TEST														
Baking water absorption, %	61.8	60.3	59.4	58.7	60.7	60.3	60.6	62.5	61.1	60.7	62.1	62.3	-	61.8
Loaf volume, cm^3	938	875	831	786	917	1132	889	1097	1012	985	1029	1060	-	1047
Evaluation	1	0	0	0	0	0	0	0	0	0	1	0	-	0
FARINOGRAM														
Water absorption, %	60.6	59.2	58.7	58.0	59.7	58.0	59.5	61.4	60.8	59.6	60.6	60.5	-	60.8
Development time, min	6.8	4.9	3.8	3.8	5.5	4.3	5.3	6.2	5.3	5.7	5.8	5.9	-	5.8
Stability, mm	10.1	6.9	7.6	6.6	8.4	6.7	8.3	8.4	7.2	8.1	8.1	8.5	-	8.0
Mixing tolerance index, BU	30	41	35	39	36	39	35	37	39	38	39	36	-	38
														

RSA Crop Quality of 2014/2015 and 2015/2016 Seasons

Country of origin	RSA Crop Average 2014/2015							RSA Crop Average 2015/2016						
Class and Grade bread wheat	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**Average**	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**Average**
No. of samples	***24***	***15***	***15***	***6***	***9***	***1***	***70***	***25***	***19***	***9***	***8***	***9***	***-***	***70***
ALVEOGRAM														
Strength (S), cm²	46.1	34.2	34.1	28.3	37.6	26.9	38.1	41.5	35.6	33.6	39.8	38.1	-	38.3
Stability (P), mm	77	71	79	72	72	50	75	83	83	78	78	79	-	81
Distensibility (L), mm	148	136	113	103	139	163	133	120	104	108	127	117	-	115
P/L	0.53	0.55	0.75	0.71	0.54	0.31	0.59	0.72	0.82	0.81	0.65	0.71	-	0.75
														
EXTENSOGRAM														
Strength, cm²	122	87	85	73	94	74	98	114	94	100	111	105	-	105
Max. height, BU	405	331	351	314	344	238	360	395	357	365	367	359	-	373
Extensibility, mm	218	191	176	166	198	219	196	207	186	187	207	204	-	198
														
MIXOGRAM														
Peak time, min	2.8	2.6	2.8	2.7	2.5	3.1	2.7	2.5	2.6	2.7	2.5	2.6	-	2.6
Absorption, %	62.0	60.4	59.6	58.8	60.8	60.8	60.7	62.8	61.2	61.0	62.4	62.3	-	62.0
														
MYCOTOXINS														
Afla G_1 (µg/kg)	ND							ND						
Afla B_1 (µg/kg)	ND							ND						
Afla G_2 (µg/kg)	ND							ND						
Afla B_2 (µg/kg)	ND							ND						
Fum B_1 (µg/kg)	ND							ND						
Fum B_2 (µg/kg)	ND							ND						
Fum B_3 (µg/kg)	ND							ND						
Deoxynivalenol (µg/kg) [max. value]	<100 [361]							<100 [593]						
Ochratoxin A (µg/kg)	ND							ND						
Zearalenone (µg/kg)	ND							ND						
T-2 Toxin (µg/kg)	ND							ND						
No. of samples	***40***							***40***						

METHODS

GRADING:

Full grading was done in accordance with the Regulations relating to the grading, packing and marking of bread wheat intended for sale in the Republic of South Africa (No. R. 64 of 29 January 2016). Please see pages 102 - 114.

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; noxious 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 by means of the Kern 222 instrument.

During earlier seasons the hectolitre mass was determined by means of the Two-level funnel method. In the 2009/2010 season the hectolitre mass value was adjusted by the addition of 2 kg/hl to all hectolitre mass values as per an Industry-wide Hectolitre Mass Dispensation published by the National Department of Agriculture.

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 sieve. For the definition of a standard sieve please refer to the definitions of Regulation No. R. 64 on page 104 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 grain and provides a measure of grain size and density. This determination does not include kernels that are broken or chipped and is done according to Industry Accepted Method 008.

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 screen.

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 and 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 checked by analyzing every fifth sample by means of the primary methods, described later on under Moisture and Protein.

FALLING NUMBER:

This method is based upon the rapid gelatinization 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. Only the altitude-corrected value is reported.

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 the 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. Bühler MLU 202 mill 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 or 2 hours for flour and whole wheat flour respectively.

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. Generally speaking, a bright white colour flour is more desirable for most products.

The **Kent Jones** colour (so called wet colour) is determined by following FTP Method No. 0007/3, 7/1991. This method determines the influence of bran and/or extraneous material present in flour by measuring the reflectance of a flour-water slurry at a wavelength of 540 nm. The lower the Kent Jones colour, the lighter/brighter the flour and vice versa.

The dry colour of wheat flour can be measured accurately and precisely with the **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 determination.

RAPID VISCO ANALYSER:

AACCI method 76-21.01, latest edition, is followed to prepare a complete pasting curve by means of the Rapid Visco Analyser (RVA). The RVA is a rotational viscometer that is able to continuously record the viscosity of a sample (under controlled temperature conditions) as the starch granules hydrate, swell and disintegrate (gelatinization 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). 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 standardized 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 flours 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 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. A 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. The value gives 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, gives 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**, measure 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:

ICC Standard No. 121, latest edition is followed.

The alveograph measures the resistance of the dough to stretching and also how extensible the dough is. 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.

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, measured along the base line in millimetres, corresponds to the maximum volume of air that the bubble can withhold. 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 optimized 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.

Keys for the evaluation of the 100 g Baking test:

0 - Excellent
1 - Very Good
2 - Good
3 - Questionable
4 - Poor
5 - Very Poor
6 - Extremely Poor

Please note:
This 100 g Baking test evaluation does not give an indication of the baking quality of the flour, but refers to the relationship between the protein content and the bread volume.

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 screening method using UPLC - MS/MS. 40 of the 252 wheat crop samples were tested for Aflatoxin G_1; B_1; G_2; B_2, Fumonisin B_1; B_2; B_3, Deoxynivalenol, 15-ADON, HT2 - Toxin, T-2 Toxin, Zearalenone and Ochratoxin A.

Wheat Imports and Exports

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

WHEAT IMPORTS PER COUNTRY

2014/15 Season (27 Sep 2014 - 25 Sep 2015)

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	68 037	Argentina	59 607	Argentina	4 380	Botswana	49 715	Cape Town	98 917
Lesotho	21 940	Australia	95 254	Australia	10 948	Lesotho	56 662	Durban	1 637 512
Mauritius	1 532	Canada	105 457	Canada	8 025	Mozambique	9 941	East London	112 216
Mozambique	56	Germany	348 385	Germany	36 081	Namibia	1 486	Port Elizabeth	103 324
Namibia	22 780	Latvia	61 005	Russian Federation	68 979	Swaziland	22 365	Richards Bay	31 174
Swaziland	16 349	Lithuania	43 791	Ukraine	22 289	Zimbabwe	7 195		
Zambia	53 138	Poland	91 483						
Zimbabwe	90 423	Russian Federation	719 784						
		Ukraine	279 364						
		United States	28 311						
Total	**274 255**	**Total**	**1 832 441**	**Total**	**150 702**	**Total**	**147 364**	**Total**	**1 983 143**

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

WHEAT IMPORTS PER COUNTRY

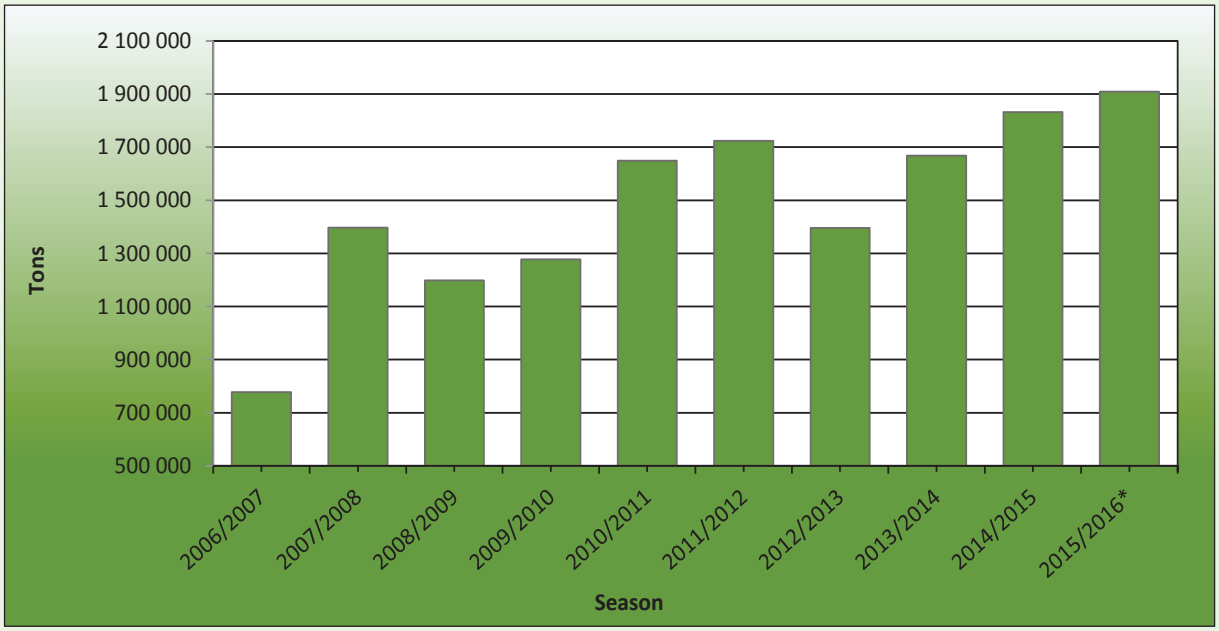
2015/16 Season (26 Sep 2015 - 2 Sep 2016)

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	5 539	Argentina	49 516	Argentina	8 780	Botswana	74 598	Cape Town	164 167
Lesotho	4 831	Australia	38 445	Australia	19 330	Lesotho	68 408	Durban	1 772 190
Mozambique	2 490	Canada	102 816	Canada	11 986	Swaziland	41 601	East London	89 115
Namibia	11 730	Germany	276 193	Germany	8 867	Zambia	2 643	Port Elizabeth	73 733
Swaziland	1 011	Lithuania	151 014	Lithuania	22 263	Zimbabwe	26 955	Richards Bay	24 153
Zambia	269	Poland	185 036	Poland	13 938				
Zimbabwe	25 865	Russian Federation	808 226	Russian Federation	113 557				
		Ukraine	109 267	Ukraine	16 505				
		United States	188 900	United States	4 719				
		United States	28 311						
Total	**51 735**	**Total**	**1 909 413**	**Total**	**219 945**	**Total**	**214 205**	**Total**	**2 123 358**

Quantity of wheat imported to the RSA

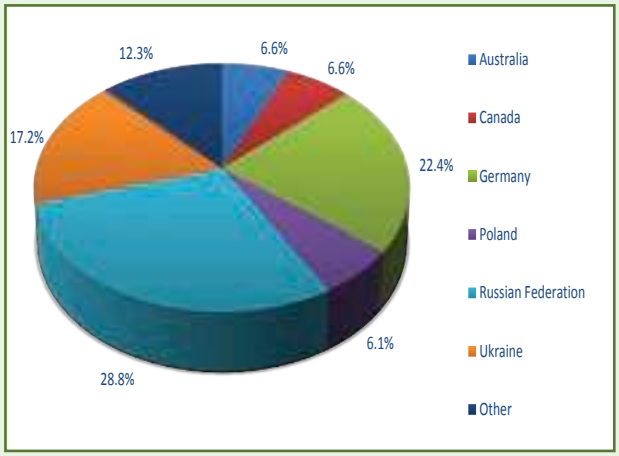
The graphs and table given below and on the next page, are based on progressive import figures per country provided by SAGIS.

Graph 18: Total wheat imports for domestic use from the 2006/2007 season

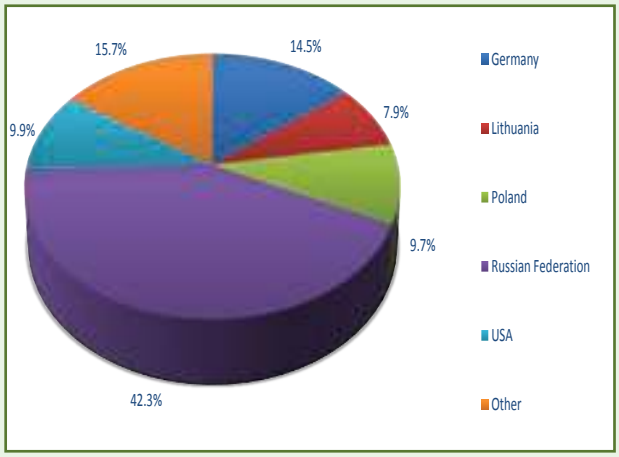


*2015/2016 season figure includes imports up to 2 September 2016.

Graph 19: Wheat imports per origin for domestic use 2014/2015 season



Graph 20: Wheat imports per origin for domestic use 2015/2016 season



*2015/2016 season figure includes imports up to 2 September 2016.

Table 7: Total wheat imports per country per season for use in RSA

	Season										Total (Tons)
	2006/2007	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016*	
Argentina	310 524	684 160	368 739	-	629 600	652 279	98 029	-	59 607	49 516	**2 851 834**
Australia	-	-	74 714	55 312	181 637	247 675	189 925	49 780	95 254	38 445	**935 945**
Brazil	-	-	42 449	123 944	58 551	276 420	234 733	-	-	-	**736 097**
Canada	153 694	194 764	54 831	72 911	79 697	45 252	48 583	111 289	105 457	102 816	**962 714**
Finland	-	-	-	-	-	-	-	25 430	-	-	**25 430**
France	-	-	-	-	-	-	-	-	-	-	**0**
Germany	80 649	111 013	518 002	809 934	88 581	105 964	95 476	179 436	348 385	276 193	**2 600 451**
Latvia	-	-	-	-	-	-	-	22 013	61 005	-	**83 018**
Lesotho	-	-	-	-	-	-	384	-	-	-	**384**
Lithuania	-	-	-	1 611	-	8 880	-	40 532	43 791	151 014	**245 828**
Poland	-	-	13 013	-	-	-	-	-	91 483	185 036	**289 532**
Romania	-	-	-	-	-	36 071	-	-	-	-	**36 071**
Russian Federation	-	-	-	-	-	154 129	245 228	800 964	719 784	808 226	**2 440 241**
Swaziland	-	-	-	-	-	-	288		-	-	**288**
UK	-	-	-	-	-	-	-	-	-	-	**0**
Ukraine	-	-	13 521	41 230	-	39 016	341 976	372 500	279 364	109 267	**1 174 705**
Uruguay	-	-	-	-	25 249	45 250	99 033	-	-	-	**169 532**
USA	232 266	406 562	113 434	173 030	586 200	112 915	42 572	66 468	28 311	188 900	**1 944 157**
Total	**777 133**	**1 396 499**	**1 198 703**	**1 277 972**	**1 649 515**	**1 723 851**	**1 396 227**	**1 668 412**	**1 832 441**	**1 909 413**	**14 496 227**

*2015/2016 season figures include imports up to 5 September2016.

Quality summary of imported wheat (1 October 2014 to 30 September 2015) (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 South African Agricultural Food, Quarantine and Inspection Services (SAAFQIS) of the Department of Agriculture, Forestry and Fisheries (DAFF) 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.

Please take note that during the grading of the samples of the 2014/2015 import season, the previous version of the South African grading regulations, as published in the Government Gazette Notice No. R. 1186 of 17 December 2010, was still in effect. According to this, Regulation 4 Standards for classes, Sub paragraph (2) A consignment shall be classified as Bread Wheat if -- (a) "the wheat in the consignment consists of at least 95 per cent (m/m) of one or more of the bread wheat cultivars specified in the cultivar list;" all imported wheat should be graded as Class Other Wheat. However, for comparison purposes, the wheat was graded by SAGL as if of local origin.

For grading as well as dough and baking quality results of the imported wheat per country, please refer to pages 78 to 95. This imported wheat quality is compared to a summary of the local crop quality of the same (2014/2015) season. To simplify the comparison between the quality of the different countries of import and South African wheat, the average quality per country was summarised in Table 8 on page 76 to 77. The minimum, maximum and standard deviation per country was also calculated. Please also 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 200 samples of wheat imported from the following countries were received (number of samples received in brackets): Argentina (9), Australia (10), Canada (14), Germany (43), Latvia (5), Poland (14), Russian Federation (67), Ukraine (32) and USA (6). 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 constant quality of flour to their customers (bakers) as possible, as in the end, consistency is one of the most important quality parameters.

Toward 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 fact 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.

Hectolitre mass, providing an indication of flour extraction potential, did not pose problems with these imported samples, since only six of the samples (3%) had hectoliter mass values below 77 kg/hl (minimum requirement for South African grade B1 wheat). Screenings represent all material that passes through a standard sieve (1.8 mm), with 3% the maximum allowed for grades 1 to 3 according to RSA grading regulations. Higher percentages screenings result in higher losses due to the removal of unmillable material. Samples from the Russian Federation, Argentina and USA had the highest average levels of screenings. Only three samples reported falling number results below 220 seconds. The wheat samples imported from Australia had the highest falling number values as in the previous season.

Based on the low average protein level as well as the weak rheological characteristics, the wheat imported from the USA were most probably not intended for bread baking 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. As in the previous season, the imported Canadian wheat had the highest protein content resulting in the highest gluten content. When evaluating gluten results, it is important to take the protein content into account. The wet gluten content of good quality white bread flour normally ranges between 27 – 33% (14% mb).

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 in the range of 60.0 – 64.0%, averaging 61.0 – 62.0%. In general, longer 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 Alveograph parameters generally are as follows: Strength 30 – 45 cm^2, 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 as a result of poor gas retention properties. In general, Extensograph strength values ranging between 80 – 150 cm^2, maximum heights of 300 – 550 BU and extensibility values of 170 – 220 mm, indicate good baking quality.

Most of the imported wheat samples, again showed a tendency towards longer mixogram mixing times. Some of these long mixing times can be explained by the low protein content of the sample. Flours having undesirably low protein starch ratios, requires more time to produce continuous protein phases during mixing. Mixing times between 2.8 and 3.5 minutes are considered to be acceptable in South Africa.

Composite samples of holds per shipment per country were tested for the presence of mycotoxin residues by means of a multi-mycotoxin analysis. The mycotoxin results in general did not raise any concerns. DON, HT-2 toxin and Zearalenone residues were however observed on some of the samples. Only one sample (from the USA) exceeded the EU maximum limits with regards to DON on unprocessed cereals (1 250 µg/kg). This value was however below the new national maximum DON level of 2 000 µg/kg for cereal grains intended for further processing.

Table 8: Average quality data of imported wheat during the 2014/2015 season (previous season)

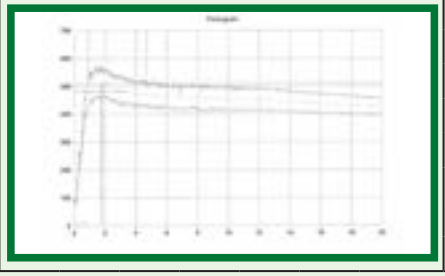
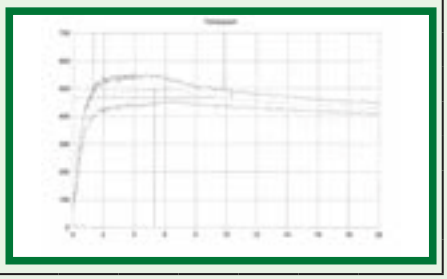
Quality parameter	Argentina				Australia				Canada				Germany				Latvia				RSA crop average 2014/2015			
	Ave	Min	Max	Stdev	Ave	Min	Max	Stdev	Ave	Min	Max	Stdev	Ave	Min	Max	Stdev	Ave	Min	Max	Stdev	Ave	Min	Max	Stdev
Hlm, kg/hl	**77.0**	73.8	78.0	1.31	**83.9**	82.3	84.8	0.80	**80.7**	79.0	82.5	1.41	**80.2**	76.6	81.9	0.91	**78.0**	**77.5**	78.6	0.47	**80.2**	70.5	84.8	1.76
Screenings, %	**4.24**	3.12	6.46	1.19	**1.74**	1.56	2.03	0.13	**2.48**	1.15	3.60	0.80	**1.98**	1.39	4.01	0.56	**2.17**	**1.54**	2.65	0.55	**1.55**	0.10	17.12	0.94
1000 kernel mass, g (13% mb)	**30.1**	27.6	31.6	1.29	**36.8**	35.8	38.4	0.77	**35.4**	30.6	45.4	3.94	**44.6**	31.2	48.2	2.88	**37.8**	**36.0**	39.7	1.33	**38.8**	25.6	47.5	2.92
WWF Protein, % (12% mb)	**11.1**	11.0	11.2	0.08	**11.2**	9.7	12.5	0.98	**12.6**	10.9	14.1	1.32	**10.9**	9.9	11.5	0.35	**11.6**	**11.1**	12.0	0.42	**11.8**	7.2	16.0	1.07
WWF Falling number, sec	**288**	195	365	68.36	**427**	361	477	40.73	**372**	312	419	34.36	**327**	205	420	43.05	**346**	**304**	375	26.81	**368**	174	570	36.07
Number of samples	***9***				***10***				***14***				***43***				***5***				***337***			
Flour Protein, % (12% mb)	**9.8**	9.7	10.0	0.12	**10.1**	8.7	11.3	0.88	**11.7**	10.1	13.2	1.31	**9.5**	8.6	10.2	0.38	**10.4**	**9.9**	10.9	0.48	**10.7**	8.5	13.9	1.16
Ash, % (db)	**0.65**	0.61	0.68	0.02	**0.55**	0.50	0.60	0.03	**0.60**	0.56	0.63	0.02	**0.52**	0.47	0.66	0.03	**0.57**	**0.55**	0.60	0.02	**0.59**	0.51	0.66	0.03
Colour, KJ	**-2.6**	-2.8	-2.3	0.17	**-3.7**	-4.0	-3.2	0.26	**-3.0**	-3.5	-2.4	0.35	**-2.7**	-3.1	-2.3	0.20	**-2.5**	**-2.7**	-2.4	0.13	**-3.3**	-3.9	-2.2	0.33
Minolta CM-5 colour, L*	**93.16**	92.83	93.44	0.19	**93.78**	93.50	94.07	0.20	**93.12**	92.70	93.29	0.15	**93.44**	92.77	93.83	0.21	**93.27**	**93.06**	93.51	0.18	**93.77**	92.98	94.30	0.30
Minolta CM-5 colour, b*	**10.49**	10.21	10.69	0.15	**10.86**	9.73	11.84	0.71	**10.69**	9.87	11.75	0.65	**9.99**	9.48	11.24	0.38	**10.51**	**9.80**	11.25	0.68	**9.72**	8.21	11.11	0.57
Wet gluten, % (14% mb)	**24.0**	22.9	24.5	0.49	**25.6**	20.8	30.5	3.44	**31.5**	25.9	38.1	4.26	**26.1**	21.2	29.8	1.61	**26.0**	**24.3**	27.0	1.10	**28.9**	20.9	37.7	3.45
Dry gluten, % (14% mb)	**8.1**	7.6	8.4	0.25	**8.8**	7.1	10.5	1.16	**10.7**	8.4	12.8	1.61	**8.9**	7.1	10.2	0.64	**8.9**	**8.2**	9.4	0.46	**9.8**	7.2	12.7	1.23
Gluten Index	**96**	94	100	2.11	**94**	88	97	3.11	**86**	68	96	10.17	**83**	58	96	8.47	**94**	**93**	97	1.64	**88**	78	97	5.37
Farinogram																								
Water absorption, % (14% mb)	**55.5**	55.3	55.8	0.21	**59.1**	58.2	59.5	0.45	**59.5**	55.8	62.8	2.70	**59.4**	55.8	61.4	1.27	**57.0**	**56.2**	57.9	0.69	**59.5**	55.9	63.5	1.43
Development time, min	**1.8**	1.4	2.0	0.17	**5.8**	1.7	8.2	2.33	**4.5**	2.0	7.2	1.89	**2.0**	1.5	2.8	0.33	**2.1**	**1.7**	2.5	0.34	**5.3**	1.7	13.2	1.89
Stability, min	**3.3**	2.0	4.1	0.69	**11.8**	9.0	14.6	2.17	**10.4**	8.9	12.5	1.16	**4.8**	1.8	9.3	1.76	**4.8**	**3.3**	9.3	2.54	**8.3**	4.7	17.7	2.75
Alveogram																								
Strength, cm^2	**34.0**	30.6	35.8	1.60	**43.3**	36.9	47.2	3.79	**43.0**	33.5	55.5	6.79	**32.0**	22.3	38.2	3.46	**35.4**	**31.3**	39.0	3.40	**38.1**	25.2	70.9	8.66
Stability, mm	**76**	73	79	2.29	**97**	74	111	14.05	**79**	72	93	5.44	**102**	72	124	9.68	**82**	**74**	95	8.53	**75**	49	109	9.65
Distensibility, mm	**88**	77	99	7.30	**103**	68	148	28.07	**122**	82	157	28.08	**61**	33	86	11.12	**83**	**71**	100	11.55	**133**	71	187	24.52
P/L	**0.88**	0.74	1.01	0.08	**1.03**	0.52	1.63	0.39	**0.69**	0.47	1.02	0.20	**1.78**	0.84	3.76	0.54	**1.00**	**0.74**	1.23	0.21	**0.59**	0.26	1.35	0.19
Extensogram																								
Strength, cm^2	**99**	93	106	3.88	**112**	87	128	12.01	**106**	87	130	13.63	**75**	58	102	8.99	**107**	**93**	120	11.15	**98**	58	201	25.43
Maximum height, BU	**470**	439	491	13.82	**452**	357	505	46.14	**392**	308	460	50.61	**354**	274	458	45.35	**495**	**458**	549	39.63	**360**	234	566	66.98
Extensibility, mm	**156**	145	164	6.75	**184**	143	224	27.07	**197**	153	242	34.56	**150**	129	170	8.79	**160**	**149**	167	8.03	**196**	155	267	24.07
Mixogram																								
Peak time, min	**4.6**	4.4	5.0	0.19	**3.2**	2.9	3.5	0.21	**3.3**	2.4	4.1	0.55	**3.4**	2.5	4.4	0.50	**4.6**	**4.1**	5.1	0.48	**2.7**	2.0	4.1	0.43
100 g Baking test																								
Volume, cm^3	**805**	769	842	24.45	**842**	773	929	47.73	**887**	801	1077	91.03	**790**	735	869	34.05	**837**	**824**	856	14.61	**889**	725	1132	85.40
Evaluation	**0**	0	0	0.00	**0**	0	0	0.00	**1**	0	4	1.51	**0**	0	2	0.50	**0**	**0**	0	0.00	**0**	0	2	0.52
Number of samples	***9***				***10***				***14***				***43***				***5***				***70***			

Table 8: Average quality data of imported wheat during the 2014/2015 season (previous season) (continue)

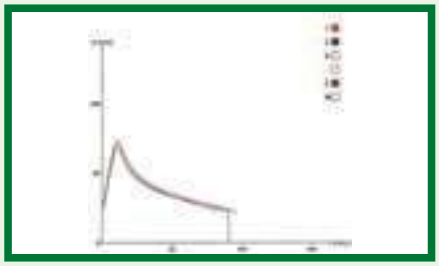
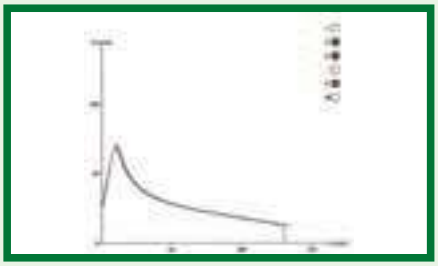
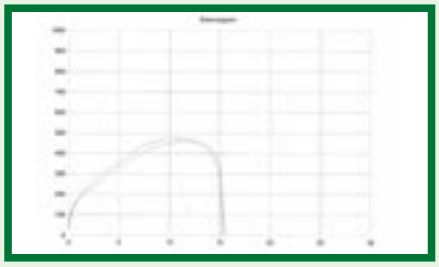
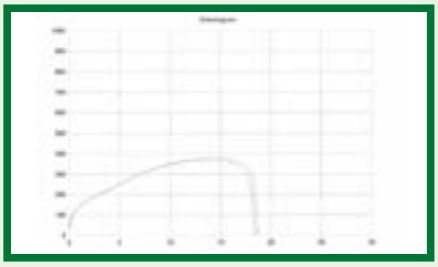
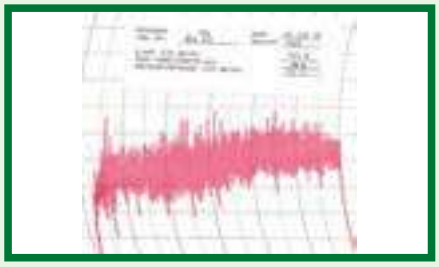
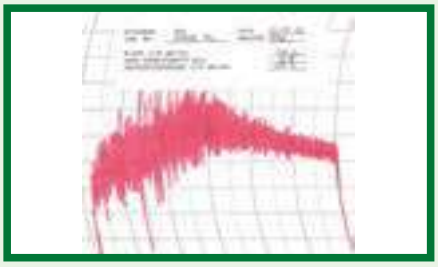
Quality parameter	Poland				Russia				Ukraine				USA				RSA crop average 2014/2015			
	Ave	Min	Max	Stdev	Ave	Min	Max	Stdev	Ave	Min	Max	Stdev	Ave	Min	Max	Stdev	Ave	Min	Max	Stdev
Hlm, kg/hl	**78.2**	76.8	79.5	0.99	**79.7**	76.8	83.2	1.29	**80.4**	78.3	82.3	0.99	**77.6**	77.0	78.2	0.46	**80.2**	70.5	84.8	1.76
Screenings, %	**2.41**	2.06	3.48	0.46	**3.33**	1.98	5.76	0.96	**2.10**	1.01	4.36	0.71	**3.14**	2.38	4.62	0.87	**1.55**	0.10	17.12	0.94
1000 kernel mass, g (13% mb)	**43.5**	42.6	45.0	0.64	**36.1**	29.7	44.6	2.84	**39.2**	34.9	44.9	2.30	**32.7**	31.4	34.5	1.25	**38.8**	25.6	47.5	2.92
WWF Protein, % (12% mb)	**11.4**	11.1	11.7	0.21	**11.3**	10.3	13.8	0.73	**11.4**	10.6	12.4	0.44	**9.9**	9.2	11.0	0.71	**11.8**	7.2	16.0	1.07
WWF Falling number, sec	**336**	283	381	29.02	**371**	272	594	51.51	**333**	270	402	33.51	**290**	270	305	13.80	**368**	174	570	36.07
Number of samples	***14***				***67***				***32***				***6***				***337***			
Flour Protein, % (12% mb)	**10.0**	9.6	10.4	0.28	**10.1**	8.6	12.5	0.75	**10.1**	9.3	11.1	0.42	**7.8**	7.2	8.3	0.47	**10.7**	8.5	13.9	1.16
Ash, % (db)	**0.49**	0.39	0.52	0.03	**0.57**	0.43	0.62	0.03	**0.52**	0.43	0.59	0.03	**0.48**	0.43	0.53	0.04	**0.59**	0.51	0.66	0.03
Colour, KJ	**-2.7**	-3.1	-2.2	0.30	**-2.7**	-3.3	-2.2	0.32	**-2.9**	-3.4	-2.4	0.22	**-2.6**	-2.9	-2.2	0.29	**-3.3**	-3.9	-2.2	0.33
Minolta CM-5 colour, L*	**93.64**	93.48	93.97	0.15	**93.23**	92.89	94.23	0.24	**93.51**	93.22	93.95	0.19	**94.55**	94.20	94.81	0.27	**93.77**	92.98	94.30	0.30
Minolta CM-5 colour, b*	**9.67**	9.02	10.23	0.35	**11.01**	9.00	12.03	0.55	**10.30**	9.77	11.80	0.44	**8.80**	8.42	9.43	0.47	**9.72**	8.21	11.11	0.57
Wet gluten, % (14% mb)	**26.9**	26.3	28.2	0.63	**26.1**	22.1	33.9	2.44	**26.2**	23.5	29.1	1.34	**20.0**	16.0	22.0	2.43	**28.9**	20.9	37.7	3.45
Dry gluten, % (14% mb)	**9.3**	8.7	10.1	0.38	**8.9**	7.4	12.0	0.92	**9.0**	8.0	10.2	0.51	**6.5**	5.0	7.3	0.92	**9.8**	7.2	12.7	1.23
Gluten Index	**89**	84	93	2.96	**92**	9	99	11.44	**93**	85	98	4.00	**86**	73	92	8.96	**88**	78	97	5.37
Farinogram																				
Water absorption, % (14% mb)	**59.1**	57.5	59.8	0.78	**56.9**	54.5	61.2	1.73	**57.0**	55.4	59.5	1.13	**49.5**	48.8	50.0	0.40	**59.5**	55.9	63.5	1.43
Development time, min	**2.0**	1.7	2.5	0.24	**2.3**	1.7	6.3	1.05	**2.1**	1.4	2.9	0.41	**1.1**	1.0	1.2	0.11	**5.3**	1.7	13.2	1.89
Stability, min	**6.2**	2.6	11.9	3.46	**6.2**	2.8	11.9	2.39	**7.8**	2.4	18.9	3.26	**1.4**	1.1	1.6	0.20	**8.3**	4.7	17.7	2.75
Alveogram																				
Strength, cm^2	**35.5**	30.6	42.0	3.17	**33.6**	21.7	52.5	5.58	**34.6**	28.6	47.6	3.86	**12.3**	10.2	15.0	1.78	**38.1**	25.2	70.9	8.66
Stability, mm	**100**	86	114	8.04	**81**	62	118	11.30	**80**	67	93	7.04	**32**	30	34	1.60	**75**	49	109	9.65
Distensibility, mm	**71**	51	98	15.17	**81**	37	144	22.30	**89**	60	124	16.53	**86**	61	111	20.13	**133**	71	187	24.52
P/L	**1.48**	0.89	2.24	0.40	**1.11**	0.51	2.97	0.50	**0.95**	0.58	1.38	0.23	**0.39**	0.28	0.52	0.10	**0.59**	0.26	1.35	0.19
Extensogram																				
Strength, cm^2	**89**	80	110	7.88	**96**	74	132	12.78	**93**	64	122	14.33	**56**	50	65	4.96	**98**	58	201	25.43
Maximum height, BU	**409**	370	466	25.49	**433**	353	545	42.21	**410**	299	509	51.32	**342**	296	376	32.89	**360**	234	566	66.98
Extensibility, mm	**158**	150	176	7.88	**163**	139	229	19.46	**164**	142	185	10.15	**116**	105	126	7.68	**196**	155	267	24.07
Mixogram																				
Peak time, min	**3.9**	3.3	5.1	0.59	**4.3**	2.8	5.5	0.66	**4.2**	3.2	5.3	0.58	**3.9**	3.0	4.7	0.76	**2.7**	2.0	4.1	0.43
100 g Baking test																				
Volume, cm^3	**792**	748	832	21.89	**826**	718	971	57.24	**825**	738	908	42.81	**724**	652	789	59.00	**889**	725	1132	85.40
Evaluation	**0**	0	1	0.50	**0**	0	2	0.50	**0**	0	2	0.62	**0**	0	0	0.00	**0**	0	2	0.52
Number of samples	***14***				***67***				***32***				***6***				***70***			

2014/2015 IMPORTED WHEAT QUALITY - ARGENTINA (1 Oct 2014 to 30 Sep 2015)

2014/2015 Imported Wheat Quality Versus 2014/2015 RSA Wheat Quality

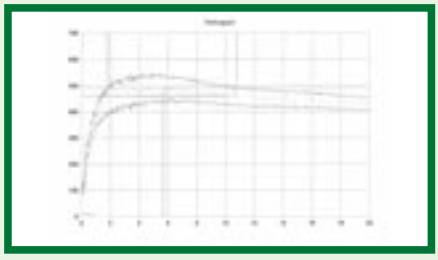
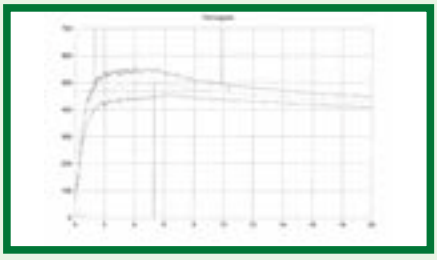
Country of origin	Argentina Average							RSA Crop Average						
Class and Grade bread wheat	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**Average**	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**Average**
No. of samples	*-*	*-*	*-*	*-*	*9*	*-*	*9*	*105*	*59*	*42*	*17*	*89*	*25*	*337*
WHEAT														
GRADING														
Protein (12% mb), %	-	-	-	-	11.06	-	11.06	12.91	11.53	10.78	9.68	11.51	11.35	11.75
Moisture, %	-	-	-	-	11.0	-	11.0	11.0	11.1	11.1	12.3	11.2	11.3	11.2
Falling number, sec	-	-	-	-	288	-	288	364	369	375	375	369	364	368
1000 Kernel mass (13% mb), g	-	-	-	-	30.1	-	30.1	38.0	39.6	40.3	41.9	38.2	38.2	38.8
Hlm (dirty), kg/hl	-	-	-	-	77.0	-	77.0	80.9	80.7	80.6	81.0	79.1	78.6	80.2
Screenings (<1.8 mm sieve), %	-	-	-	-	4.24	-	4.24	1.17	1.26	1.32	1.42	2.19	2.01	1.55
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, %	-	-	-	-	0.51	-	0.51	0.09	0.07	0.09	0.07	0.18	0.12	0.11
Other grain & unthreshed ears, %	-	-	-	-	0.65	-	0.65	0.42	0.44	0.43	0.38	0.98	0.58	0.58
Heat damaged kernels, %	-	-	-	-	0.02	-	0.02	0.00	0.00	0.01	0.01	0.00	0.01	0.00
Immature kernels, %	-	-	-	-	0.03	-	0.03	0.13	0.05	0.05	0.04	0.10	0.03	0.09
Insect damaged kernels, %	-	-	-	-	0.24	-	0.24	0.44	0.71	0.76	0.85	1.71	1.22	0.94
Heavily frost damaged kernels, %	-	-	-	-	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sprouted kernels, %	-	-	-	-	0.83	-	0.83	0.04	0.04	0.04	0.10	0.10	0.08	0.06
Total damaged kernels, %	-	-	-	-	1.12	-	1.12	0.62	0.79	0.85	0.99	1.92	1.34	1.09
Combined deviations, %	-	-	-	-	6.53	-	6.53	2.29	2.57	2.69	2.86	5.27	4.05	3.34
Field fungi, %	-	-	-	-	0.43	-	0.43	0.23	0.16	0.09	0.06	0.11	1.76	0.27
Storage fungi, %	-	-	-	-	0.00	-	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.01
Ergot, %	-	-	-	-	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Noxious seeds (*Crotalaria spp., etc.*)	-	-	-	-	0	-	0	0	0	0	0	0	0	0
Noxious seeds (*Argemone mexicana, etc.*)	-	-	-	-	0	-	0	0	0	0	0	0	0	0
Live insects	-	-	-	-	No	-	No	No	No	No	No	No	Yes	No
Undesirable odour	-	-	-	-	No	-	No	No	No	No	No	No	No	No
	B1	**B2**	**B3**	**B4**	**UT**	**COW**	**Average**	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**Average**
No. of samples	*-*	*-*	*-*	*-*	*9*	*-*	*9*	*24*	*15*	*15*	*6*	*9*	*1*	*70*
BÜHLER EXTRACTION, %	-	-	-	-	72.0	-	72.0	73.5	73.6	73.3	73.9	72.8	70.9	73.4
FLOUR														
Colour, KJ (wet)	-	-	-	-	-2.6	-	-2.6	-3.3	-3.3	-3.5	-3.7	-3.2	-2.2	-3.3
Colour, Minolta CM5 (dry)														
L*	-	-	-	-	93.16	-	93.16	93.66	93.72	93.93	94.07	93.77	92.98	93.77
a*	-	-	-	-	0.54	-	0.54	0.47	0.45	0.41	0.39	0.41	0.56	0.44
b*	-	-	-	-	10.49	-	10.49	9.58	9.81	9.87	9.49	9.82	9.78	9.72
Ash (db), %	-	-	-	-	0.65	-	0.65	0.58	0.59	0.58	0.58	0.61	0.65	0.59
Protein (12% mb), %	-	-	-	-	9.8	-	9.8	11.9	10.5	9.7	8.9	10.9	10.9	10.7
Wet Gluten (14% mb), %	-	-	-	-	24.0	-	24.0	31.8	28.9	25.7	24.1	30.2	27.2	28.9
Dry Gluten (14% mb), %	-	-	-	-	8.1	-	8.1	10.8	9.7	8.6	8.3	10.4	9.2	9.8
Gluten Index	-	-	-	-	96	-	96	88	86	88	90	86	94	88
100g BAKING TEST														
Baking water absorption, %	-	-	-	-	59.6	-	59.6	61.8	60.3	59.4	58.7	60.7	60.3	60.6
Loaf volume, cm^3	-	-	-	-	805	-	805	938	875	831	786	917	1132	889
Evaluation	-	-	-	-	0	-	0	1	0	0	0	0	0	0
FARINOGRAM														
Water absorption, %	-	-	-	-	55.5	-	55.5	60.6	59.2	58.7	58.0	59.7	58.0	59.5
Development time, min	-	-	-	-	1.8	-	1.8	6.8	4.9	3.8	3.8	5.5	4.3	5.3
Stability, mm	-	-	-	-	3.3	-	3.3	10.1	6.9	7.6	6.6	8.4	6.7	8.3
Mixing tolerance index, BU	-	-	-	-	56	-	56	30	41	35	39	36	39	35
														

2014/2015 Imported Wheat Quality Versus 2014/2015 RSA Wheat Quality

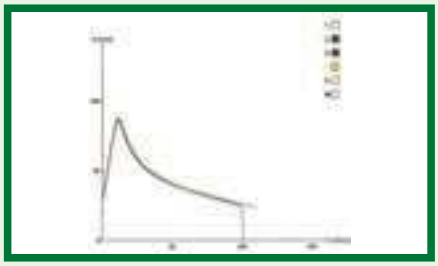
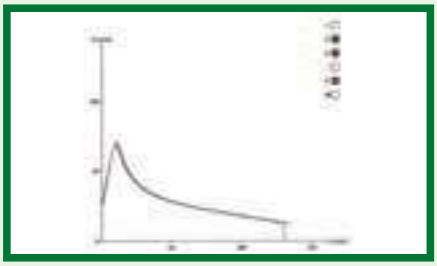
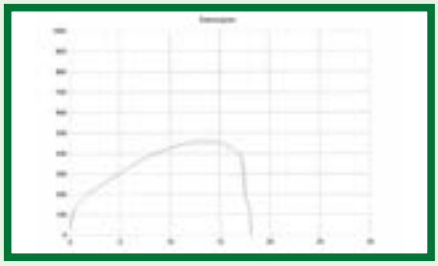
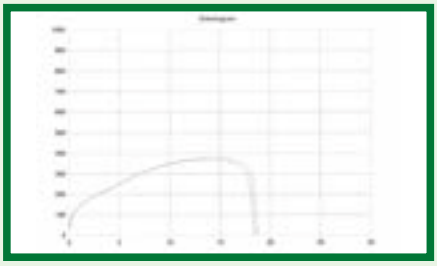
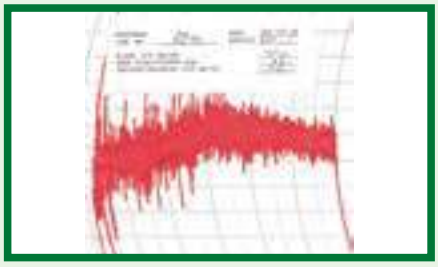
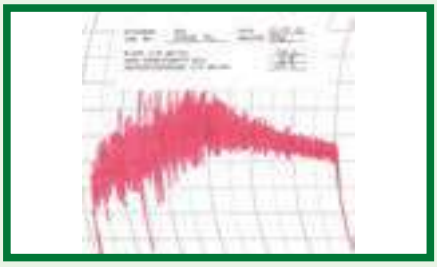
Country of origin	Argentina Average							RSA Crop Average						
Class and Grade bread wheat	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	-	-	-	-	9	-	9	24	15	15	6	9	1	70
ALVEOGRAM														
Strength (S), cm²	-	-	-	-	34.0	-	34.0	46.1	34.2	34.1	28.3	37.6	26.9	38.1
Stability (P), mm	-	-	-	-	76	-	76	77	71	79	72	72	50	75
Distensibility (L), mm	-	-	-	-	88	-	88	148	136	113	103	139	163	133
P/L	-	-	-	-	0.88	-	0.88	0.53	0.55	0.75	0.71	0.54	0.31	0.59
														
EXTENSOGRAM														
Strength, cm²	-	-	-	-	99	-	99	122	87	85	73	94	74	98
Max. height, BU	-	-	-	-	470	-	470	405	331	351	314	344	238	360
Extensibility, mm	-	-	-	-	156	-	156	218	191	176	166	198	219	196
														
MIXOGRAM														
Peak time, min	-	-	-	-	4.6	-	4.6	2.8	2.6	2.8	2.7	2.5	3.1	2.7
Absorption, %	-	-	-	-	59.6	-	59.6	62.0	60.4	59.6	58.8	60.8	60.8	60.7
														
MYCOTOXINS														
Afla G_1 (µg/kg)	ND							ND						
Afla B_1 (µg/kg)	ND							ND						
Afla G_2 (µg/kg)	ND							ND						
Afla B_2 (µg/kg)	ND							ND						
Fum B_1 (µg/kg)	ND							ND						
Fum B_2 (µg/kg)	ND							ND						
Fum B_3 (µg/kg)	ND							ND						
Deoxynivalenol (µg/kg) [max. value]	260 [282]							<100 [361]						
15-ADON (µg/kg) [max. value]	ND							ND						
Ochratoxin A (µg/kg)	ND							ND						
Zearalenone (µg/kg)	ND							ND						
HT-2 (µg/kg)	ND							ND						
T-2 Toxin (µg/kg)	ND							ND						
No. of samples	***2***							***40***						

2014/2015 IMPORTED WHEAT QUALITY - AUSTRALIA (1 Oct 2014 to 30 Sep 2015)

2014/2015 Imported Wheat Quality Versus 2014/2015 RSA Wheat Quality

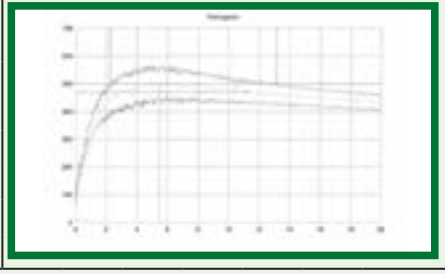
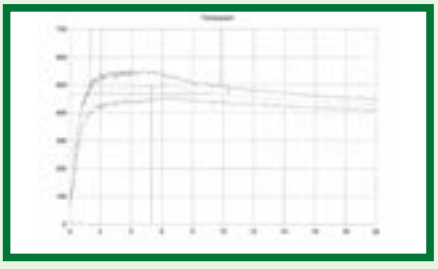
Country of origin	Australia Average							RSA Crop Average						
Class and Grade bread wheat	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	*3*	*3*	*-*	*2*	*2*	*-*	*10*	*105*	*59*	*42*	*17*	*89*	*25*	*337*
WHEAT														
GRADING														
Protein (12% mb), %	12.31	11.37	-	9.72	10.83	-	11.22	12.91	11.53	10.78	9.68	11.51	11.35	11.75
Moisture, %	10.7	10.1	-	9.8	11.1	-	10.4	11.0	11.1	11.1	12.3	11.2	11.3	11.2
Falling number, sec	374	456	-	454	438	-	427	364	369	375	375	369	364	368
1000 Kernel mass (13% mb), g	37.4	36.0	-	37.3	36.7	-	36.8	38.0	39.6	40.3	41.9	38.2	38.2	38.8
Hlm (dirty), kg/hl	82.9	84.5	-	84.5	83.8	-	83.9	80.9	80.7	80.6	81.0	79.1	78.6	80.2
Screenings (<1.8 mm sieve), %	1.85	1.73	-	1.75	1.60	-	1.74	1.17	1.26	1.32	1.42	2.19	2.01	1.55
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, %	0.11	0.15	-	0.07	0.14	-	0.12	0.09	0.07	0.09	0.07	0.18	0.12	0.11
Other grain & unthreshed ears, %	0.48	0.55	-	0.28	1.75	-	0.72	0.42	0.44	0.43	0.38	0.98	0.58	0.58
Heat damaged kernels, %	0.00	0.00	-	0.00	0.00	-	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00
Immature kernels, %	0.02	0.00	-	0.00	0.00	-	0.01	0.13	0.05	0.05	0.04	0.10	0.03	0.09
Insect damaged kernels, %	0.08	0.00	-	0.00	0.00	-	0.02	0.44	0.71	0.76	0.85	1.71	1.22	0.94
Heavily frost damaged kernels, %	0.00	0.00	-	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sprouted kernels, %	0.05	0.00	-	0.00	0.00	-	0.02	0.04	0.04	0.04	0.10	0.10	0.08	0.06
Total damaged kernels, %	0.15	0.00	-	0.00	0.00	-	0.05	0.62	0.79	0.85	0.99	1.92	1.34	1.09
Combined deviations, %	2.60	2.43	-	2.10	3.48	-	2.63	2.29	2.57	2.69	2.86	5.27	4.05	3.34
Field fungi, %	0.00	0.00	-	0.00	0.00	-	0.00	0.23	0.16	0.09	0.06	0.11	1.76	0.27
Storage fungi, %	0.00	0.00	-	0.00	0.00	-	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.01
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
Noxious seeds (*Crotalaria spp., etc.*)	0	0	-	0	0	-	0	0	0	0	0	0	0	0
Noxious seeds (*Argemone mexicana, 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	Yes	No
Undesirable odour	No	No	-	No	No	-	No	No	No	No	No	No	No	No
	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	***3***	***3***	***-***	***2***	***2***	***-***	***10***	***24***	***15***	***15***	***6***	***9***	***1***	***70***
BÜHLER EXTRACTION, %	73.5	71.7	-	71.1	71.4	-	72.1	73.5	73.6	73.3	73.9	72.8	70.9	73.4
FLOUR														
Colour, KJ (wet)	-3.4	-3.7	-	-4.0	-3.9	-	-3.7	-3.3	-3.3	-3.5	-3.7	-3.2	-2.2	-3.3
Colour, Minolta CM5 (dry)														
L*	93.79	93.59	-	94.06	93.76	-	93.78	93.66	93.72	93.93	94.07	93.77	92.98	93.77
a*	0.49	0.53	-	0.37	0.48	-	0.48	0.47	0.45	0.41	0.39	0.41	0.56	0.44
b*	10.54	11.71	-	9.91	11.02	-	10.86	9.58	9.81	9.87	9.49	9.82	9.78	9.72
Ash (db), %	0.54	0.59	-	0.54	0.53	-	0.55	0.58	0.59	0.58	0.58	0.61	0.65	0.59
Protein (12% mb), %	11.0	10.3	-	8.7	9.8	-	10.1	11.9	10.5	9.7	8.9	10.9	10.9	10.7
Wet Gluten (14% mb), %	30.1	24.9	-	21.1	24.6	-	25.6	31.8	28.9	25.7	24.1	30.2	27.2	28.9
Dry Gluten (14% mb), %	10.3	8.5	-	7.3	8.7	-	8.8	10.8	9.7	8.6	8.3	10.4	9.2	9.8
Gluten Index	90	96	-	97	96	-	94	88	86	88	90	86	94	88
100g BAKING TEST														
Baking water absorption, %	61.0	60.0	-	58.6	59.6	-	59.9	61.8	60.3	59.4	58.7	60.7	60.3	60.6
Loaf volume, cm^3	895	804	-	811	849	-	842	938	875	831	786	917	1132	889
Evaluation	0	0	-	0	0	-	0	1	0	0	0	0	0	0
FARINOGRAM														
Water absorption, %	59.4	59.3	-	58.3	59.3	-	59.1	60.6	59.2	58.7	58.0	59.7	58.0	59.5
Development time, min	5.9	7.6	-	1.7	7.0	-	5.8	6.8	4.9	3.8	3.8	5.5	4.3	5.3
Stability, mm	9.2	13.6	-	10.9	13.9	-	11.8	10.1	6.9	7.6	6.6	8.4	6.7	8.3
Mixing tolerance index, BU	31	27	-	21	21	-	26	30	41	35	39	36	39	35
														

2014/2015 Imported Wheat Quality Versus 2014/2015 RSA Wheat Quality

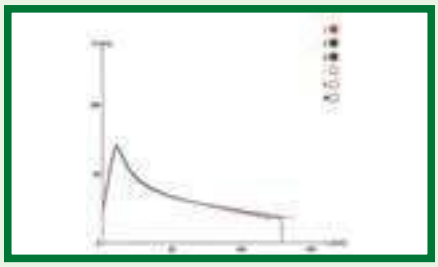
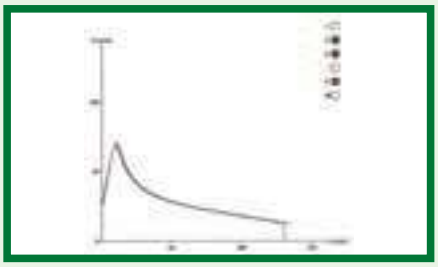
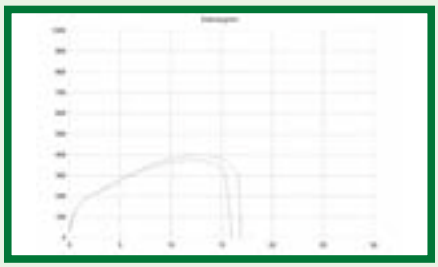
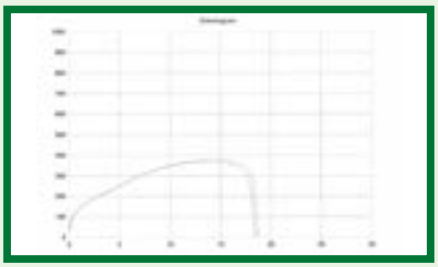
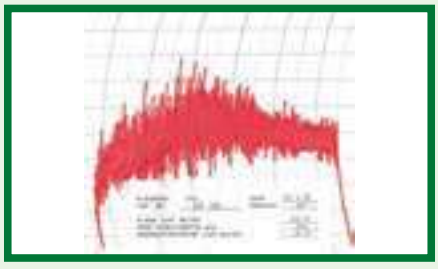
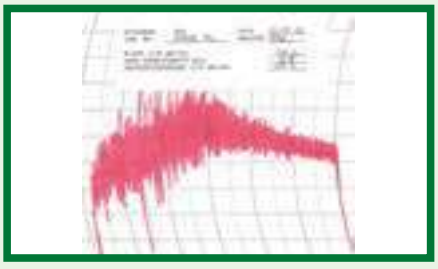
Country of origin	Australia Average							RSA Crop Average						
Class and Grade bread wheat	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	*3*	*3*	*-*	*2*	*2*	*-*	*10*	*24*	*15*	*15*	*6*	*9*	*1*	*70*
ALVEOGRAM														
Strength (S), cm²	42.5	46.2	-	37.5	46.0	-	43.3	46.1	34.2	34.1	28.3	37.6	26.9	38.1
Stability (P), mm	77	102	-	109	106	-	97	77	71	79	72	72	50	75
Distensibility (L), mm	140	97	-	69	92	-	103	148	136	113	103	139	163	133
P/L	0.55	1.06	-	1.59	1.16	-	1.03	0.53	0.55	0.75	0.71	0.54	0.31	0.59
														
EXTENSOGRAM														
Strength, cm²	120	114	-	94	113	-	112	122	87	85	73	94	74	98
Max. height, BU	397	487	-	466	466	-	452	405	331	351	314	344	238	360
Extensibility, mm	218	176	-	148	180	-	184	218	191	176	166	198	219	196
														
MIXOGRAM														
Peak time, min	3.0	3.3	-	3.5	3.2	-	3.2	2.8	2.6	2.8	2.7	2.5	3.1	2.7
Absorption, %	61.0	60.0	-	58.6	59.6	-	59.9	62.0	60.4	59.6	58.8	60.8	60.8	60.7
														
MYCOTOXINS														
Afla G_1 (µg/kg)	ND							ND						
Afla B_1 (µg/kg)	ND							ND						
Afla G_2 (µg/kg)	ND							ND						
Afla B_2 (µg/kg)	ND							ND						
Fum B_1 (µg/kg)	ND							ND						
Fum B_2 (µg/kg)	ND							ND						
Fum B_3 (µg/kg)	ND							ND						
Deoxynivalenol (µg/kg) [max. value]	ND							<100 [361]						
15-ADON (µg/kg) [max. value]	ND							ND						
Ochratoxin A (µg/kg)	ND							ND						
Zearalenone (µg/kg)	ND							ND						
HT-2 (µg/kg)	ND							ND						
T-2 Toxin (µg/kg)	ND							ND						
No. of samples	***5***							***40***						

2014/2015 IMPORTED WHEAT QUALITY - CANADA (1 Oct 2014 to 30 Sep 2015)

2014/2015 Imported Wheat Quality Versus 2014/2015 RSA Wheat Quality

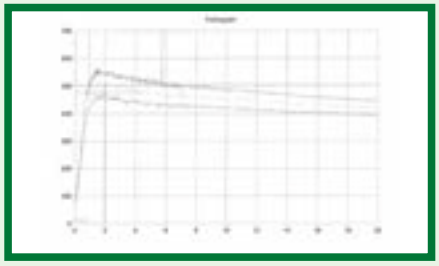
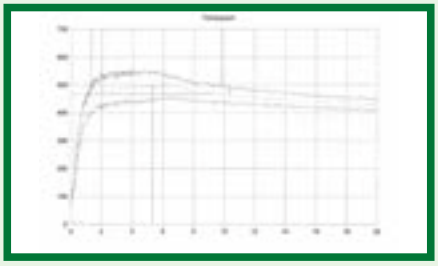
Country of origin	Canada Average							RSA Crop Average						
Class and Grade bread wheat	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	*5*	*3*	*1*	*3*	*1*	*1*	*14*	*105*	*59*	*42*	*17*	*89*	*25*	*337*
WHEAT														
GRADING														
Protein (12% mb), %	13.80	11.19	10.91	12.21	13.65	12.13	12.56	12.91	11.53	10.78	9.68	11.51	11.35	11.75
Moisture, %	12.3	10.9	11.0	11.0	13.0	11.2	11.6	11.0	11.1	11.1	12.3	11.2	11.3	11.2
Falling number, sec	371	397	326	369	344	384	372	364	369	375	375	369	364	368
1000 Kernel mass (13% mb), g	33.0	35.2	32.9	39.0	33.1	42.4	35.4	38.0	39.6	40.3	41.9	38.2	38.2	38.8
Hlm (dirty), kg/hl	81.7	79.1	82.1	79.2	81.9	82.5	80.7	80.9	80.7	80.6	81.0	79.1	78.6	80.2
Screenings (<1.8 mm sieve), %	2.23	2.81	1.18	3.32	1.15	2.78	2.48	1.17	1.26	1.32	1.42	2.19	2.01	1.55
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	0.00	0.00
Foreign matter, %	0.09	0.08	0.04	0.04	0.12	0.12	0.08	0.09	0.07	0.09	0.07	0.18	0.12	0.11
Other grain & unthreshed ears, %	0.21	0.49	0.08	0.33	0.08	0.24	0.28	0.42	0.44	0.43	0.38	0.98	0.58	0.58
Heat damaged kernels, %	0.00	0.00	0.00	0.00	0.08	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.01	0.00
Immature kernels, %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.05	0.05	0.04	0.10	0.03	0.09
Insect damaged kernels, %	0.06	0.11	0.00	0.13	0.18	0.08	0.09	0.44	0.71	0.76	0.85	1.71	1.22	0.94
Heavily frost damaged kernels, %	1.32	0.03	0.00	0.00	6.48	0.00	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sprouted kernels, %	0.11	0.00	0.16	0.05	0.08	0.00	0.07	0.04	0.04	0.04	0.10	0.10	0.08	0.06
Total damaged kernels, %	0.18	0.11	0.16	0.18	0.34	0.08	0.17	0.62	0.79	0.85	0.99	1.92	1.34	1.09
Combined deviations, %	2.71	3.49	1.46	3.87	1.69	3.22	3.00	2.29	2.57	2.69	2.86	5.27	4.05	3.34
Field fungi, %	0.37	0.00	0.32	0.17	0.42	0.00	0.22	0.23	0.16	0.09	0.06	0.11	1.76	0.27
Storage fungi, %	0.02	0.00	0.00	0.08	0.00	0.32	0.05	0.01	0.01	0.00	0.00	0.01	0.00	0.01
Ergot, %	0.01	0.00	0.00	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Noxious seeds (*Crotalaria spp., etc.*)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Noxious seeds (*Argemone mexicana, etc.*)	0	0	0	4	0	8	1	0	0	0	0	0	0	0
Live insects	No	No	No	No	No	No	No	No	No	No	No	No	Yes	No
Undesirable odour	No	No	No	No	No	No	No	No	No	No	No	No	No	No
	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	*5*	*3*	*1*	*3*	*1*	*1*	*14*	*24*	*15*	*15*	*6*	*9*	*1*	*70*
BÜHLER EXTRACTION, %	72.0	73.7	69.8	74.0	71.8	73.1	72.7	73.5	73.6	73.3	73.9	72.8	70.9	73.4
FLOUR														
Colour, KJ	-3.3	-2.7	-3.2	-2.8	-3.3	-3.0	-3.0	-3.3	-3.3	-3.5	-3.7	-3.2	-2.2	-3.3
Colour, Minolta CM5 (dry)														
L*	93.09	93.08	93.29	93.14	93.08	93.13	93.12	93.66	93.72	93.93	94.07	93.77	92.98	93.77
a*	0.59	0.48	0.50	0.49	0.65	0.53	0.54	0.47	0.45	0.41	0.39	0.41	0.56	0.44
b*	10.27	11.51	10.26	10.95	10.31	10.32	10.69	9.58	9.81	9.87	9.49	9.82	9.78	9.72
Ash (db), %	0.59	0.62	0.56	0.60	0.60	0.57	0.60	0.58	0.59	0.58	0.58	0.61	0.65	0.59
Protein (12% mb), %	12.8	10.1	12.4	11.1	12.5	10.9	11.7	11.9	10.5	9.7	8.9	10.9	10.9	10.7
Wet Gluten (14% mb), %	34.8	26.4	33.0	30.0	34.5	30.6	31.5	31.8	28.9	25.7	24.1	30.2	27.2	28.9
Dry Gluten (14% mb), %	11.9	8.9	11.6	9.8	12.1	10.0	10.7	10.8	9.7	8.6	8.3	10.4	9.2	9.8
Gluten Index	80	94	93	86	89	73	86	88	86	88	90	86	94	88
100g BAKING TEST														
Baking water absorption, %	63.2	59.9	62.7	61.1	62.8	58.9	61.7	61.8	60.3	59.4	58.7	60.7	60.3	60.6
Loaf volume, cm^3	906	806	889	905	971	899	887	938	875	831	786	917	1132	889
Evaluation	2	0	2	0	0	0	1	1	0	0	0	0	0	0
FARINOGRAM														
Water absorption, %	61.7	56.1	61.7	57.9	61.5	59.8	59.5	60.6	59.2	58.7	58.0	59.7	58.0	59.5
Development time, min	5.9	2.4	5.0	3.9	6.3	3.2	4.5	6.8	4.9	3.8	3.8	5.5	4.3	5.3
Stability, mm	11.0	9.6	9.8	10.2	10.7	10.3	10.4	10.1	6.9	7.6	6.6	8.4	6.7	8.3
Mixing tolerance index, BU	26	25	31	26	24	12	25	30	41	35	39	36	39	35
														

2014/2015 Imported Wheat Quality Versus 2014/2015 RSA Wheat Quality

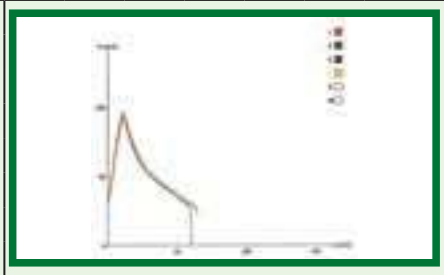
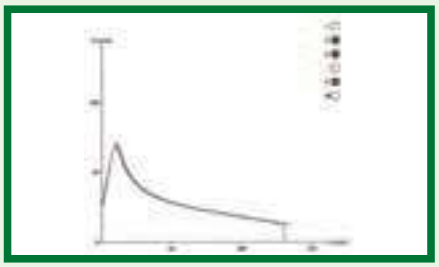
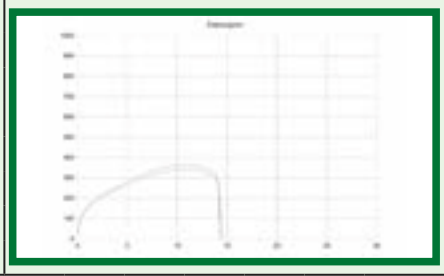
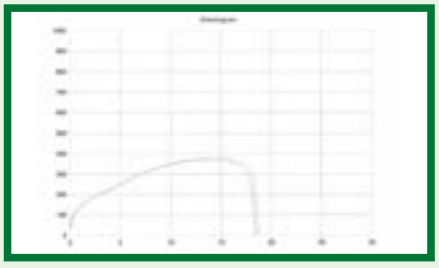
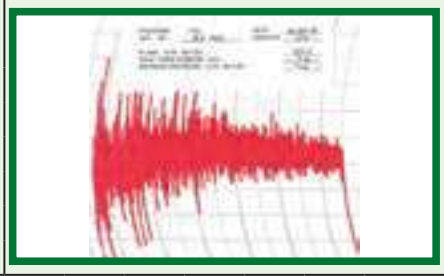
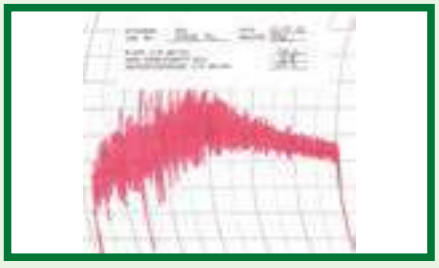
Country of origin	Canada Average							RSA Crop Average						
Class and Grade bread wheat	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	*5*	*3*	*1*	*3*	*1*	*1*	*14*	*24*	*15*	*15*	*6*	*9*	*1*	*70*
ALVEOGRAM														
Strength (S), cm²	46.3	35.8	55.5	39.9	48.3	39.4	43.0	46.1	34.2	34.1	28.3	37.6	26.9	38.1
Stability (P), mm	76	80	86	77	74	93	79	77	71	79	72	72	50	75
Distensibility (L), mm	143	90	139	111	150	91	122	148	136	113	103	139	163	133
P/L	0.53	0.88	0.62	0.74	0.49	1.02	0.69	0.53	0.55	0.75	0.71	0.54	0.31	0.59
														
EXTENSOGRAM														
Strength, cm²	114	100	100	102	114	89	106	122	87	85	73	94	74	98
Max. height, BU	364	450	344	409	358	387	392	405	331	351	314	344	238	360
Extensibility, mm	228	162	210	183	210	166	197	218	191	176	166	198	219	196
														
MIXOGRAM														
Peak time, min	2.8	4.0	3.1	3.5	3.0	3.4	3.3	2.8	2.6	2.8	2.7	2.5	3.1	2.7
Absorption, %	63.2	59.9	62.7	61.1	62.8	60.8	61.8	62.0	60.4	59.6	58.8	60.8	60.8	60.7
														
MYCOTOXINS														
Afla G_1 (µg/kg)	ND							ND						
Afla B_1 (µg/kg)	ND							ND						
Afla G_2 (µg/kg)	ND							ND						
Afla B_2 (µg/kg)	ND							ND						
Fum B_1 (µg/kg)	ND							ND						
Fum B_2 (µg/kg)	ND							ND						
Fum B_3 (µg/kg)	ND							ND						
Deoxynivalenol (µg/kg) [max. value]	215 [422]							<100 [361]						
15-ADON (µg/kg)	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	***6***							***40***						

2014/2015 IMPORTED WHEAT QUALITY - GERMANY (1 Oct 2014 to 30 Sep 2015)

2014/2015 Imported Wheat Quality Versus 2014/2015 RSA Wheat Quality

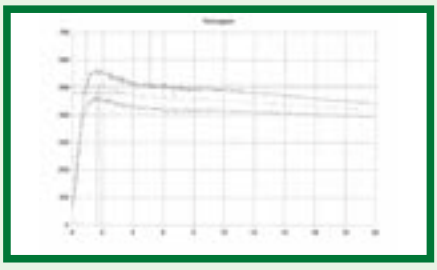
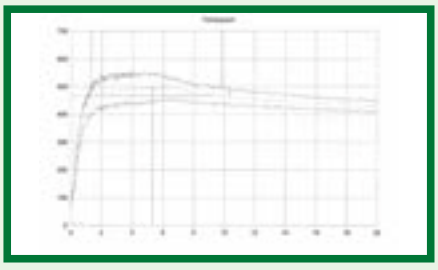
Country of origin	Germany Average							RSA Crop Average						
Class and Grade bread wheat	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	-	*14*	*18*	*3*	*8*	-	*43*	*105*	*59*	*42*	*17*	*89*	*25*	*337*
WHEAT														
GRADING														
Protein (12% mb), %	-	11.21	10.79	9.92	10.99	-	10.90	12.91	11.53	10.78	9.68	11.51	11.35	11.75
Moisture, %	-	11.8	12.3	12.0	11.8	-	12.0	11.0	11.1	11.1	12.3	11.2	11.3	11.2
Falling number, sec	-	336	326	264	340	-	327	364	369	375	375	369	364	368
1000 Kernel mass (13% mb), g	-	44.2	45.7	44.3	42.9	-	44.6	38.0	39.6	40.3	41.9	38.2	38.2	38.8
Hlm (dirty), kg/hl	-	80.6	80.3	79.0	79.6	-	80.2	80.9	80.7	80.6	81.0	79.1	78.6	80.2
Screenings (<1.8 mm sieve), %	-	2.01	1.97	1.44	2.15	-	1.98	1.17	1.26	1.32	1.42	2.19	2.01	1.55
Gravel, stones, turf and glass, %	-	0.01	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Foreign matter, %	-	0.10	0.07	0.04	0.10	-	0.08	0.09	0.07	0.09	0.07	0.18	0.12	0.11
Other grain & unthreshed ears, %	-	0.39	0.41	0.53	1.30	-	0.58	0.42	0.44	0.43	0.38	0.98	0.58	0.58
Heat damaged kernels, %	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00
Immature kernels, %	-	0.00	0.00	0.00	0.00	-	0.00	0.13	0.05	0.05	0.04	0.10	0.03	0.09
Insect damaged kernels, %	-	0.04	0.00	0.00	0.04	-	0.02	0.44	0.71	0.76	0.85	1.71	1.22	0.94
Heavily frost damaged kernels, %	-	0.00	0.45	0.00	0.12	-	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sprouted kernels, %	-	0.07	0.03	0.08	0.23	-	0.08	0.04	0.04	0.04	0.10	0.10	0.08	0.06
Total damaged kernels, %	-	0.11	0.03	0.08	0.27	-	0.10	0.62	0.79	0.85	0.99	1.92	1.34	1.09
Combined deviations, %	-	2.61	2.42	2.09	3.82	-	2.72	2.29	2.57	2.69	2.86	5.27	4.05	3.34
Field fungi, %	-	0.10	0.11	0.15	0.21	-	0.13	0.23	0.16	0.09	0.06	0.11	1.76	0.27
Storage fungi, %	-	0.03	0.00	0.03	0.00	-	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.01
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
Noxious seeds (*Crotalaria spp., etc.*)	-	0	0	0	0	-	0	0	0	0	0	0	0	0
Noxious seeds (*Argemone mexicana, 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	Yes	No
Undesirable odour	-	No	No	No	No	-	No	No	No	No	No	No	No	No
	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	-	*14*	*18*	*3*	*8*	-	*43*	*24*	*15*	*15*	*6*	*9*	*1*	*70*
BÜHLER EXTRACTION, %	-	73.8	73.8	73.0	73.1	-	73.6	73.5	73.6	73.3	73.9	72.8	70.9	73.4
FLOUR														
Colour, KJ	-	-2.6	-2.7	-2.8	-2.8	-	-2.7	-3.3	-3.3	-3.5	-3.7	-3.2	-2.2	-3.3
Colour, Minolta CM5 (dry)														
L*	-	93.33	93.48	93.66	93.43	-	93.44	93.66	93.72	93.93	94.07	93.77	92.98	93.77
a*	-	0.49	0.53	0.39	0.51	-	0.50	0.47	0.45	0.41	0.39	0.41	0.56	0.44
b*	-	10.22	9.74	9.92	10.19	-	9.99	9.58	9.81	9.87	9.49	9.82	9.78	9.72
Ash (db), %	-	0.52	0.51	0.50	0.53	-	0.52	0.58	0.59	0.58	0.58	0.61	0.65	0.59
Protein (12% mb), %	-	9.9	9.4	8.6	9.7	-	9.5	11.9	10.5	9.7	8.9	10.9	10.9	10.7
Wet Gluten (14% mb), %	-	27.3	25.9	21.7	26.5	-	26.1	31.8	28.9	25.7	24.1	30.2	27.2	28.9
Dry Gluten (14% mb), %	-	9.3	8.8	7.2	9.0	-	8.9	10.8	9.7	8.6	8.3	10.4	9.2	9.8
Gluten Index	-	81	83	94	82	-	83	88	86	88	90	86	94	88
100g BAKING TEST														
Baking water absorption, %	-	59.7	59.2	58.6	59.5	-	59.3	61.8	60.3	59.4	58.7	60.7	60.3	60.6
Loaf volume, cm^3	-	806	789	751	779	-	790	938	875	831	786	917	1132	889
Evaluation	-	0	0	0	0	-	0	1	0	0	0	0	0	0
FARINOGRAM														
Water absorption, %	-	60.0	59.4	58.2	58.6	-	59.4	60.6	59.2	58.7	58.0	59.7	58.0	59.5
Development time, min	-	2.2	1.9	1.5	1.8	-	2.0	6.8	4.9	3.8	3.8	5.5	4.3	5.3
Stability, mm	-	6.1	4.3	2.1	4.5	-	4.8	10.1	6.9	7.6	6.6	8.4	6.7	8.3
Mixing tolerance index, BU	-	38	46	66	47	-	45	30	41	35	39	36	39	35
														

2014/2015 Imported Wheat Quality Versus 2014/2015 RSA Wheat Quality

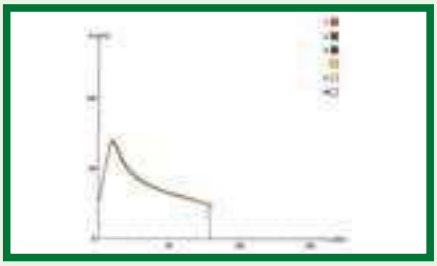
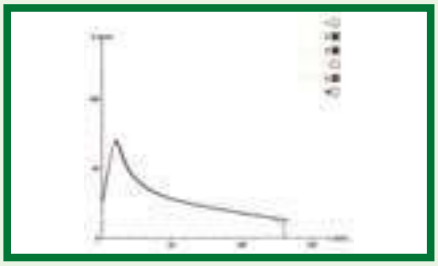
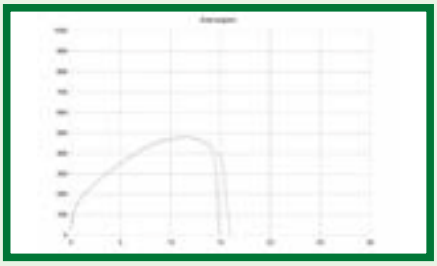
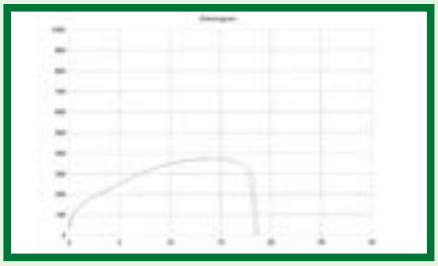
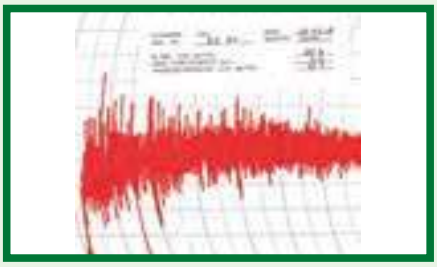
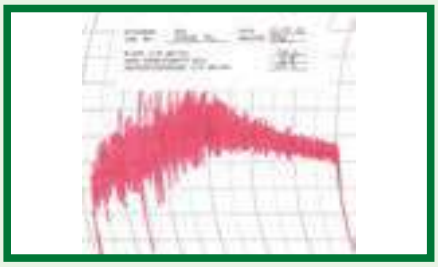
Country of origin	Germany Average							RSA Crop Average						
Class and Grade bread wheat	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	-	*14*	*18*	*3*	*8*	-	*43*	*24*	*15*	*15*	*6*	*9*	*1*	*70*
ALVEOGRAM														
Strength (S), cm²	-	33.0	32.4	27.3	31.3	-	32.0	46.1	34.2	34.1	28.3	37.6	26.9	38.1
Stability (P), mm	-	104	104	93	99	-	102	77	71	79	72	72	50	75
Distensibility (L), mm	-	61	60	55	62	-	61	148	136	113	103	139	163	133
P/L	-	1.78	1.80	1.75	1.72	-	1.78	0.53	0.55	0.75	0.71	0.54	0.31	0.59
														
EXTENSOGRAM														
Strength, cm²	-	74	72	79	81	-	75	122	87	85	73	94	74	98
Max. height, BU	-	336	349	380	389	-	354	405	331	351	314	344	238	360
Extensibility, mm	-	156	146	150	149	-	150	218	191	176	166	198	219	196
														
MIXOGRAM														
Peak time, min	-	3.2	3.3	4.3	3.6	-	3.4	2.8	2.6	2.8	2.7	2.5	3.1	2.7
Absorption, %	-	59.7	59.2	58.6	59.5	-	59.4	62.0	60.4	59.6	58.8	60.8	60.8	60.7
														
MYCOTOXINS														
Afla G_1 (µg/kg)	ND							ND						
Afla B_1 (µg/kg)	ND							ND						
Afla G_2 (µg/kg)	ND							ND						
Afla B_2 (µg/kg)	ND							ND						
Fum B_1 (µg/kg)	ND							ND						
Fum B_2 (µg/kg)	ND							ND						
Fum B_3 (µg/kg)	ND							ND						
Deoxynivalenol (µg/kg) [max. value]	ND							<100 [361]						
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 [<20]							ND						
T-2 Toxin (µg/kg)	ND							ND						
No. of samples	***12***							***40***						

2014/2015 IMPORTED WHEAT QUALITY - LATVIA (1 Oct 2014 to 30 Sep 2015)

2014/2015 Imported Wheat Quality Versus 2014/2015 RSA Wheat Quality

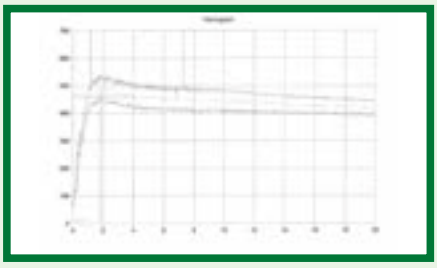
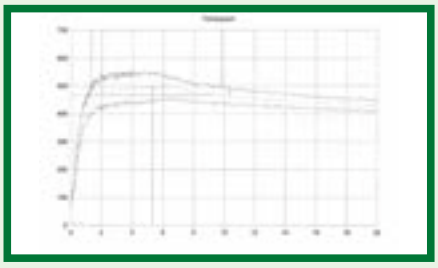
Country of origin	Latvia Average							RSA Crop Average						
Class and Grade bread wheat	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	*1*	*3*	*-*	*-*	*1*	*-*	*5*	*105*	*59*	*42*	*17*	*89*	*25*	*337*
WHEAT														
GRADING														
Protein (12% mb), %	12.02	11.33	-	-	11.80	-	11.56	12.91	11.53	10.78	9.68	11.51	11.35	11.75
Moisture, %	12.0	10.8	-	-	11.7	-	11.2	11.0	11.1	11.1	12.3	11.2	11.3	11.2
Falling number, sec	340	362	-	-	304	-	346	364	369	375	375	369	364	368
1000 Kernel mass (13% mb), g	37.8	38.4	-	-	36.0	-	37.8	38.0	39.6	40.3	41.9	38.2	38.2	38.8
Hlm (dirty), kg/hl	77.9	78.2	-	-	77.5	-	78.0	80.9	80.7	80.6	81.0	79.1	78.6	80.2
Screenings (<1.8 mm sieve), %	1.54	2.27	-	-	2.48	-	2.17	1.17	1.26	1.32	1.42	2.19	2.01	1.55
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, %	0.06	0.07	-	-	0.10	-	0.07	0.09	0.07	0.09	0.07	0.18	0.12	0.11
Other grain & unthreshed ears, %	0.78	0.53	-	-	1.18	-	0.71	0.42	0.44	0.43	0.38	0.98	0.58	0.58
Heat damaged kernels, %	0.00	0.00	-	-	0.08	-	0.02	0.00	0.00	0.01	0.01	0.00	0.01	0.00
Immature kernels, %	0.00	0.00	-	-	0.00	-	0.00	0.13	0.05	0.05	0.04	0.10	0.03	0.09
Insect damaged kernels, %	0.08	0.07	-	-	0.08	-	0.08	0.44	0.71	0.76	0.85	1.71	1.22	0.94
Heavily frost damaged kernels, %	0.00	0.00	-	-	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sprouted kernels, %	0.16	0.16	-	-	0.08	-	0.14	0.04	0.04	0.04	0.10	0.10	0.08	0.06
Total damaged kernels, %	0.24	0.23	-	-	0.24	-	0.24	0.62	0.79	0.85	0.99	1.92	1.34	1.09
Combined deviations, %	2.62	3.10	-	-	4.00	-	3.19	2.29	2.57	2.69	2.86	5.27	4.05	3.34
Field fungi, %	0.08	0.45	-	-	0.14	-	0.32	0.23	0.16	0.09	0.06	0.11	1.76	0.27
Storage fungi, %	0.00	0.00	-	-	0.00	-	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.01
Ergot, %	0.00	0.00	-	-	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Noxious seeds (*Crotalaria spp., etc.*)	0	0	-	-	0	-	0	0	0	0	0	0	0	0
Noxious seeds (*Argemone mexicana, etc.*)	0	0	-	-	0	-	0	0	0	0	0	0	0	0
Live insects	No	No	-	-	No	-	No	No	No	No	No	No	Yes	No
Undesirable odour	No	No	-	-	No	-	No	No	No	No	No	No	No	No
	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	*1*	*3*	*-*	*-*	*1*	*-*	*5*	*24*	*15*	*15*	*6*	*9*	*1*	*70*
BÜHLER EXTRACTION, %	71.4	72.8	-	-	70.9	-	72.1	73.5	73.6	73.3	73.9	72.8	70.9	73.4
FLOUR														
Colour, KJ	-2.6	-2.5	-	-	-2.5	-	-2.5	-3.3	-3.3	-3.5	-3.7	-3.2	-2.2	-3.3
Colour, Minolta CM5 (dry)														
L*	93.26	93.19	-	-	93.51	-	93.27	93.66	93.72	93.93	94.07	93.77	92.98	93.77
a*	0.50	0.46	-	-	0.44	-	0.47	0.47	0.45	0.41	0.39	0.41	0.56	0.44
b*	10.43	10.74	-	-	9.91	-	10.51	9.58	9.81	9.87	9.49	9.82	9.78	9.72
Ash (db), %	0.56	0.58	-	-	0.56	-	0.57	0.58	0.59	0.58	0.58	0.61	0.65	0.59
Protein (12% mb), %	10.9	10.2	-	-	10.5	-	10.4	11.9	10.5	9.7	8.9	10.9	10.9	10.7
Wet Gluten (14% mb), %	27.0	25.8	-	-	25.7	-	26.0	31.8	28.9	25.7	24.1	30.2	27.2	28.9
Dry Gluten (14% mb), %	9.4	8.7	-	-	8.9	-	8.9	10.8	9.7	8.6	8.3	10.4	9.2	9.8
Gluten Index	97	94	-	-	93	-	94	88	86	88	90	86	94	88
100g BAKING TEST														
Baking water absorption, %	60.8	60.0	-	-	60.4	-	60.2	61.8	60.3	59.4	58.7	60.7	60.3	60.6
Loaf volume, cm^3	849	837	-	-	824	-	837	938	875	831	786	917	1132	889
Evaluation	0	0	-	-	0	-	0	1	0	0	0	0	0	0
FARINOGRAM														
Water absorption, %	57.3	56.8	-	-	57.0	-	57.0	60.6	59.2	58.7	58.0	59.7	58.0	59.5
Development time, min	2.4	2.0	-	-	2.0	-	2.1	6.8	4.9	3.8	3.8	5.5	4.3	5.3
Stability, mm	3.7	5.7	-	-	3.3	-	4.8	10.1	6.9	7.6	6.6	8.4	6.7	8.3
Mixing tolerance index, BU	62	45	-	-	59	-	51	30	41	35	39	36	39	35
														

2014/2015 Imported Wheat Quality Versus 2014/2015 RSA Wheat Quality

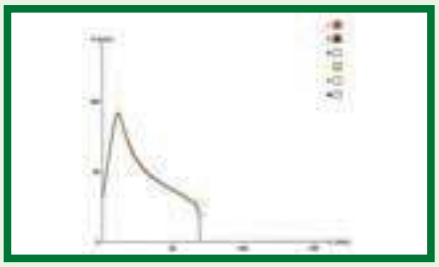
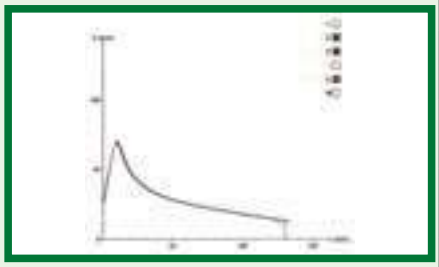
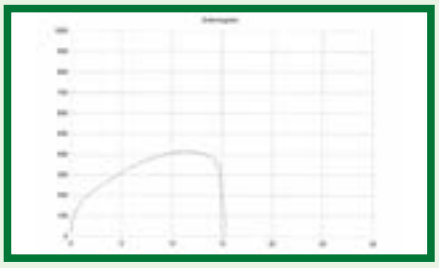
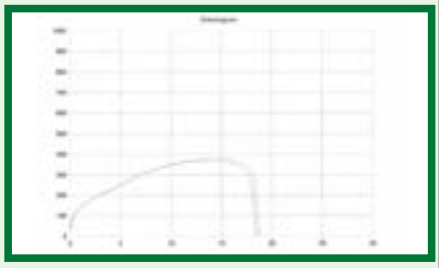
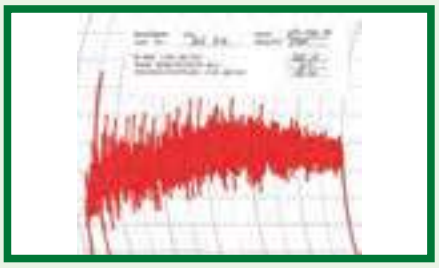
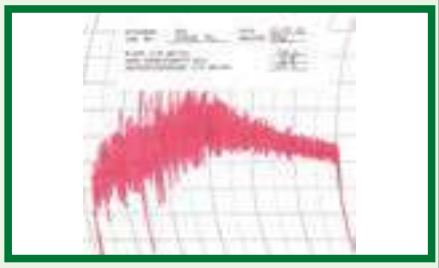
Country of origin	Latvia Average							RSA Crop Average						
Class and Grade bread wheat	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	*1*	*3*	*-*	*-*	*1*	*-*	*5*	*24*	*15*	*15*	*6*	*9*	*1*	*70*
ALVEOGRAM														
Strength (S), cm²	38.8	35.0	-	-	33.3	-	35.4	46.1	34.2	34.1	28.3	37.6	26.9	38.1
Stability (P), mm	74	83	-	-	85	-	82	77	71	79	72	72	50	75
Distensibility (L), mm	100	82	-	-	71	-	83	148	136	113	103	139	163	133
P/L	0.74	1.02	-	-	1.20	-	1.00	0.53	0.55	0.75	0.71	0.54	0.31	0.59
														
EXTENSOGRAM														
Strength, cm²	120	103	-	-	103	-	107	122	87	85	73	94	74	98
Max. height, BU	549	487	-	-	465	-	495	405	331	351	314	344	238	360
Extensibility, mm	164	157	-	-	166	-	160	218	191	176	166	198	219	196
														
MIXOGRAM														
Peak time, min	5.1	4.3	-	-	5.1	-	4.6	2.8	2.6	2.8	2.7	2.5	3.1	2.7
Absorption, %	60.8	60.0	-	-	60.4	-	60.2	62.0	60.4	59.6	58.8	60.8	60.8	60.7
														
MYCOTOXINS														
Afla G_1 (µg/kg)	ND							ND						
Afla B_1 (µg/kg)	ND							ND						
Afla G_2 (µg/kg)	ND							ND						
Afla B_2 (µg/kg)	ND							ND						
Fum B_1 (µg/kg)	ND							ND						
Fum B_2 (µg/kg)	ND							ND						
Fum B_3 (µg/kg)	ND							ND						
Deoxynivalenol (µg/kg) [max. value]	<100 [172]							<100 [361]						
15-ADON (µg/kg)	ND							ND						
Ochratoxin A (µg/kg)	ND							ND						
Zearalenone (µg/kg)	ND							ND						
HT-2 (µg/kg) [max. value]	ND [<20]							ND						
T-2 Toxin (µg/kg)	ND							ND						
No. of samples	***2***							***40***						

2014/2015 IMPORTED WHEAT QUALITY - Poland (1 Oct 2014 to 30 Sep 2015)

2014/2015 Imported Wheat Quality Versus 2014/2015 RSA Wheat Quality

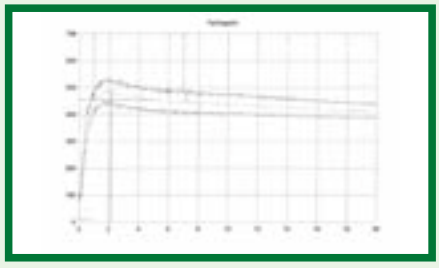
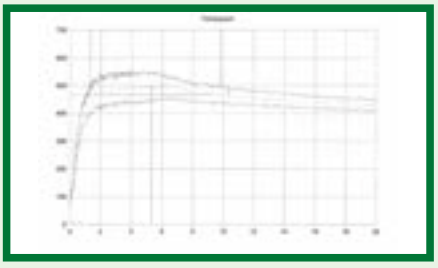
Country of origin	Poland Average							RSA Crop Average						
Class and Grade bread wheat	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	-	*12*	-	*2*	-	-	*14*	*105*	*59*	*42*	*17*	*89*	*25*	*337*
WHEAT														
GRADING														
Protein (12% mb), %	-	11.30	-	11.67	-	-	11.35	12.91	11.53	10.78	9.68	11.51	11.35	11.75
Moisture, %	-	12.3	-	12.1	-	-	12.3	11.0	11.1	11.1	12.3	11.2	11.3	11.2
Falling number, sec	-	331	-	366	-	-	336	364	369	375	375	369	364	368
1000 Kernel mass (13% mb), g	-	43.5	-	43.3	-	-	43.5	38.0	39.6	40.3	41.9	38.2	38.2	38.8
Hlm (dirty), kg/hl	-	78.1	-	78.9	-	-	78.2	80.9	80.7	80.6	81.0	79.1	78.6	80.2
Screenings (<1.8 mm sieve), %	-	2.23	-	3.46	-	-	2.41	1.17	1.26	1.32	1.42	2.19	2.01	1.55
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, %	-	0.09	-	0.04	-	-	0.08	0.09	0.07	0.09	0.07	0.18	0.12	0.11
Other grain & unthreshed ears, %	-	0.38	-	0.41	-	-	0.39	0.42	0.44	0.43	0.38	0.98	0.58	0.58
Heat damaged kernels, %	-	0.01	-	0.00	-	-	0.01	0.00	0.00	0.01	0.01	0.00	0.01	0.00
Immature kernels, %	-	0.00	-	0.00	-	-	0.00	0.13	0.05	0.05	0.04	0.10	0.03	0.09
Insect damaged kernels, %	-	0.05	-	0.07	-	-	0.05	0.44	0.71	0.76	0.85	1.71	1.22	0.94
Heavily frost damaged kernels, %	-	0.00	-	0.00	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sprouted kernels, %	-	0.14	-	0.00	-	-	0.12	0.04	0.04	0.04	0.10	0.10	0.08	0.06
Total damaged kernels, %	-	0.19	-	0.07	-	-	0.18	0.62	0.79	0.85	0.99	1.92	1.34	1.09
Combined deviations, %	-	2.89	-	3.98	-	-	3.05	2.29	2.57	2.69	2.86	5.27	4.05	3.34
Field fungi, %	-	0.17	-	0.20	-	-	0.17	0.23	0.16	0.09	0.06	0.11	1.76	0.27
Storage fungi, %	-	0.10	-	0.00	-	-	0.09	0.01	0.01	0.00	0.00	0.01	0.00	0.01
Ergot, %	-	0.00	-	0.00	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Noxious seeds (*Crotalaria spp., etc.*)	-	0	-	0	-	-	0	0	0	0	0	0	0	0
Noxious seeds (*Argemone mexicana, etc.*)	-	0	-	0	-	-	0	0	0	0	0	0	0	0
Live insects	-	No	-	No	-	-	No	No	No	No	No	No	Yes	No
Undesirable odour	-	No	-	No	-	-	No	No	No	No	No	No	No	No
	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	-	*12*	-	*2*	-	-	*14*	*24*	*15*	*15*	*6*	*9*	*1*	*70*
BÜHLER EXTRACTION, %	-	73.5	-	73.9	-	-	73.5	73.5	73.6	73.3	73.9	72.8	70.9	73.4
FLOUR														
Colour, KJ	-	-2.7	-	-2.9	-	-	-2.7	-3.3	-3.3	-3.5	-3.7	-3.2	-2.2	-3.3
Colour, Minolta CM5 (dry)														
L*	-	93.63	-	93.68	-	-	93.64	93.66	93.72	93.93	94.07	93.77	92.98	93.77
a*	-	0.50	-	0.49	-	-	0.50	0.47	0.45	0.41	0.39	0.41	0.56	0.44
b*	-	9.70	-	9.52	-	-	9.67	9.58	9.81	9.87	9.49	9.82	9.78	9.72
Ash (db), %	-	0.49	-	0.48	-	-	0.49	0.58	0.59	0.58	0.58	0.61	0.65	0.59
Protein (12% mb), %	-	9.9	-	10.4	-	-	10.0	11.9	10.5	9.7	8.9	10.9	10.9	10.7
Wet Gluten (14% mb), %	-	26.8	-	27.8	-	-	26.9	31.8	28.9	25.7	24.1	30.2	27.2	28.9
Dry Gluten (14% mb), %	-	9.2	-	9.5	-	-	9.3	10.8	9.7	8.6	8.3	10.4	9.2	9.8
Gluten Index	-	88	-	92	-	-	89	88	86	88	90	86	94	88
100g BAKING TEST														
Baking water absorption, %	-	59.7	-	60.2	-	-	59.8	61.8	60.3	59.4	58.7	60.7	60.3	60.6
Loaf volume, cm^3	-	789	-	813	-	-	792	938	875	831	786	917	1132	889
Evaluation	-	0	-	1	-	-	0	1	0	0	0	0	0	0
FARINOGRAM														
Water absorption, %	-	59.2	-	58.1	-	-	59.1	60.6	59.2	58.7	58.0	59.7	58.0	59.5
Development time, min	-	1.9	-	2.1	-	-	2.0	6.8	4.9	3.8	3.8	5.5	4.3	5.3
Stability, mm	-	5.6	-	9.9	-	-	6.2	10.1	6.9	7.6	6.6	8.4	6.7	8.3
Mixing tolerance index, BU	-	44	-	35	-	-	43	30	41	35	39	36	39	35
														

2014/2015 Imported Wheat Quality Versus 2014/2015 RSA Wheat Quality

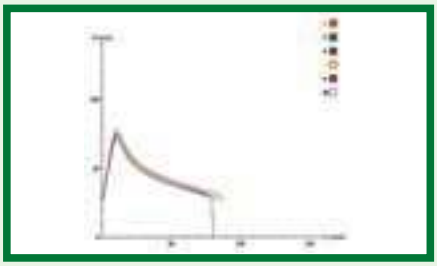
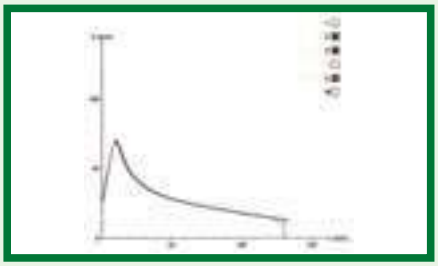
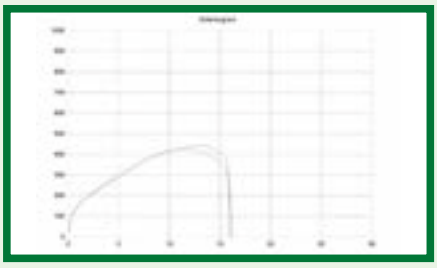
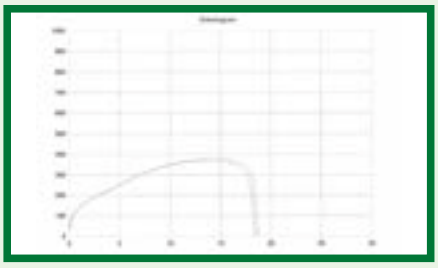
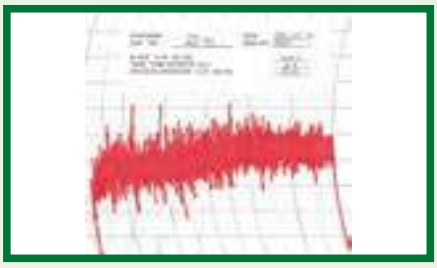
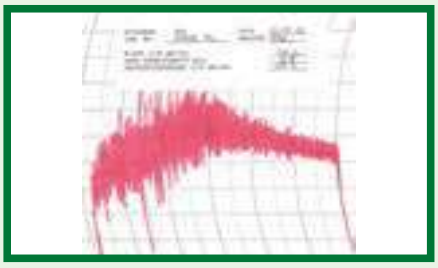
Country of origin	Poland Average							RSA Crop Average						
Class and Grade bread wheat	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	-	*12*	-	*2*	-	-	*14*	*24*	*15*	*15*	*6*	*9*	*1*	*70*
ALVEOGRAM														
Strength (S), cm²	-	34.7	-	40.1	-	-	35.5	46.1	34.2	34.1	28.3	37.6	26.9	38.1
Stability (P), mm	-	101	-	91	-	-	100	77	71	79	72	72	50	75
Distensibility (L), mm	-	67	-	91	-	-	71	148	136	113	103	139	163	133
P/L	-	1.57	-	1.01	-	-	1.48	0.53	0.55	0.75	0.71	0.54	0.31	0.59
														
EXTENSOGRAM														
Strength, cm²	-	86	-	103	-	-	89	122	87	85	73	94	74	98
Max. height, BU	-	400	-	455	-	-	409	405	331	351	314	344	238	360
Extensibility, mm	-	157	-	167	-	-	158	218	191	176	166	198	219	196
														
MIXOGRAM														
Peak time, min	-	3.9	-	4.4	-	-	3.9	2.8	2.6	2.8	2.7	2.5	3.1	2.7
Absorption, %	-	59.7	-	60.2	-	-	59.8	62.0	60.4	59.6	58.8	60.8	60.8	60.7
														
MYCOTOXINS														
Afla G_1 (µg/kg)	ND							ND						
Afla B_1 (µg/kg)	ND							ND						
Afla G_2 (µg/kg)	ND							ND						
Afla B_2 (µg/kg)	ND							ND						
Fum B_1 (µg/kg)	ND							ND						
Fum B_2 (µg/kg)	ND							ND						
Fum B_3 (µg/kg)	ND							ND						
Deoxynivalenol (µg/kg) [max. value]	ND							<100 [361]						
15-ADON (µg/kg)	ND							ND						
Ochratoxin A (µg/kg)	ND							ND						
Zearalenone (µg/kg)	ND							ND						
HT-2 (µg/kg)	ND							ND						
T-2 Toxin (µg/kg)	ND							ND						
No. of samples	***3***							***40***						

2014/2015 IMPORTED WHEAT QUALITY - RUSSIA (1 Oct 2014 to 30 Sep 2015)

2014/2015 Imported Wheat Quality Versus 2014/2015 RSA Wheat Quality

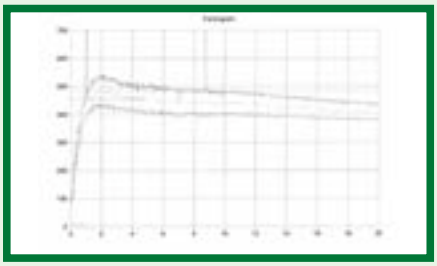
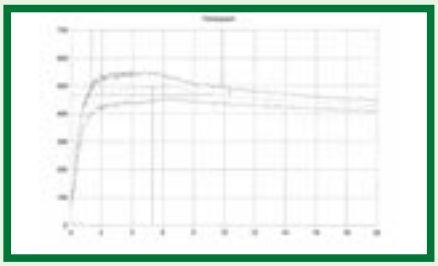
Country of origin	Russia Average							RSA Crop Average						
Class and Grade bread wheat	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	*4*	*15*	*3*	*10*	*10*	*25*	*67*	*105*	*59*	*42*	*17*	*89*	*25*	*337*
WHEAT														
GRADING														
Protein (12% mb), %	13.66	11.30	10.71	11.39	10.86	11.21	11.33	12.91	11.53	10.78	9.68	11.51	11.35	11.75
Moisture, %	12.4	11.5	11.2	10.9	10.8	11.0	11.1	11.0	11.1	11.1	12.3	11.2	11.3	11.2
Falling number, sec	331	380	375	350	360	386	371	364	369	375	375	369	364	368
1000 Kernel mass (13% mb), g	32.3	38.0	42.0	34.6	35.7	35.6	36.1	38.0	39.6	40.3	41.9	38.2	38.2	38.8
Hlm (dirty), kg/hl	81.9	79.4	81.0	79.7	79.9	79.2	79.7	80.9	80.7	80.6	81.0	79.1	78.6	80.2
Screenings (<1.8 mm sieve), %	2.62	2.46	2.39	3.39	4.41	3.63	3.33	1.17	1.26	1.32	1.42	2.19	2.01	1.55
Gravel, stones, turf and glass, %	0.00	0.00	0.00	0.00	0.02	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Foreign matter, %	0.04	0.11	0.15	0.14	0.19	0.28	0.19	0.09	0.07	0.09	0.07	0.18	0.12	0.11
Other grain & unthreshed ears, %	0.13	0.27	0.34	0.54	0.62	0.43	0.42	0.42	0.44	0.43	0.38	0.98	0.58	0.58
Heat damaged kernels, %	0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.01	0.00
Immature kernels, %	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.13	0.05	0.05	0.04	0.10	0.03	0.09
Insect damaged kernels, %	0.00	0.10	0.05	0.07	0.11	0.12	0.10	0.44	0.71	0.76	0.85	1.71	1.22	0.94
Heavily frost damaged kernels, %	1.74	0.00	0.00	0.11	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sprouted kernels, %	0.00	0.10	0.05	0.09	0.06	0.08	0.08	0.04	0.04	0.04	0.10	0.10	0.08	0.06
Total damaged kernels, %	0.00	0.21	0.10	0.17	0.18	0.21	0.18	0.62	0.79	0.85	0.99	1.92	1.34	1.09
Combined deviations, %	2.79	3.06	2.98	4.14	5.41	4.54	4.10	2.29	2.57	2.69	2.86	5.27	4.05	3.34
Field fungi, %	0.24	0.27	0.16	0.26	0.30	0.19	0.24	0.23	0.16	0.09	0.06	0.11	1.76	0.27
Storage fungi, %	0.00	0.04	0.07	0.01	0.07	0.16	0.08	0.01	0.01	0.00	0.00	0.01	0.00	0.01
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	0.00	0.00
Noxious seeds (*Crotalaria spp., etc.*)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Noxious seeds (*Argemone mexicana, etc.*)	0	2	1	1	2	12	5	0	0	0	0	0	0	0
Live insects	No	No	No	No	No	No	No	No	No	No	No	No	Yes	No
Undesirable odour	No	No	No	No	No	No	No	No	No	No	No	No	No	No
	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	*4*	*15*	*3*	*10*	*10*	*25*	*67*	*24*	*15*	*15*	*6*	*9*	*1*	*70*
BÜHLER EXTRACTION, %	72.4	72.4	72.1	72.3	72.6	72.3	72.4	73.5	73.6	73.3	73.9	72.8	70.9	73.4
FLOUR														
Colour, KJ	-3.2	-2.5	-2.6	-2.7	-2.7	-2.9	-2.7	-3.3	-3.3	-3.5	-3.7	-3.2	-2.2	-3.3
Colour, Minolta CM5 (dry)														
L*	92.99	93.30	93.28	93.29	93.18	93.21	93.23	93.66	93.72	93.93	94.07	93.77	92.98	93.77
a*	0.61	0.46	0.49	0.48	0.47	0.47	0.48	0.47	0.45	0.41	0.39	0.41	0.56	0.44
b*	10.48	10.92	10.30	10.83	11.02	11.29	11.01	9.58	9.81	9.87	9.49	9.82	9.78	9.72
Ash (db), %	0.57	0.58	0.55	0.57	0.56	0.56	0.57	0.58	0.59	0.58	0.58	0.61	0.65	0.59
Protein (12% mb), %	12.5	10.0	9.6	10.2	9.5	10.0	10.1	11.9	10.5	9.7	8.9	10.9	10.9	10.7
Wet Gluten (14% mb), %	33.4	26.2	25.6	26.0	24.1	25.6	26.1	31.8	28.9	25.7	24.1	30.2	27.2	28.9
Dry Gluten (14% mb), %	11.7	9.0	8.6	9.1	8.2	8.7	8.9	10.8	9.7	8.6	8.3	10.4	9.2	9.8
Gluten Index	92	92	85	94	87	94	92	88	86	88	90	86	94	88
100g BAKING TEST														
Baking water absorption, %	62.8	59.9	59.4	59.9	59.4	59.7	59.9	61.8	60.3	59.4	58.7	60.7	60.3	60.6
Loaf volume, cm^3	949	804	766	812	800	844	826	938	875	831	786	917	1132	889
Evaluation	0	0	0	0	0	0	0	1	0	0	0	0	0	0
FARINOGRAM														
Water absorption, %	60.9	57.2	59.2	56.4	56.4	56.1	56.9	60.6	59.2	58.7	58.0	59.7	58.0	59.5
Development time, min	5.8	2.1	1.9	2.4	2.0	2.0	2.3	6.8	4.9	3.8	3.8	5.5	4.3	5.3
Stability, mm	10.6	6.3	3.8	8.3	5.6	5.2	6.2	10.1	6.9	7.6	6.6	8.4	6.7	8.3
Mixing tolerance index, BU	31	41	47	79	44	46	43	30	41	35	39	36	39	35
														

2014/2015 Imported Wheat Quality Versus 2014/2015 RSA Wheat Quality

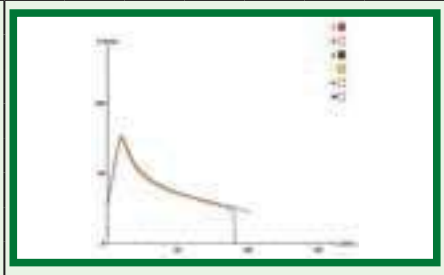
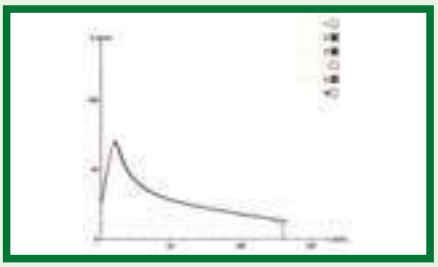
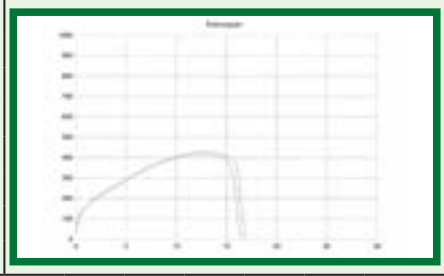
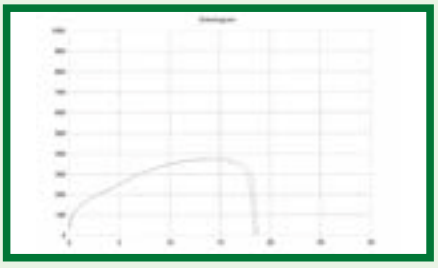
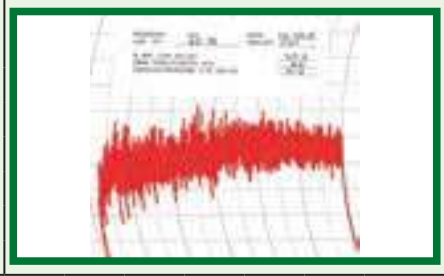
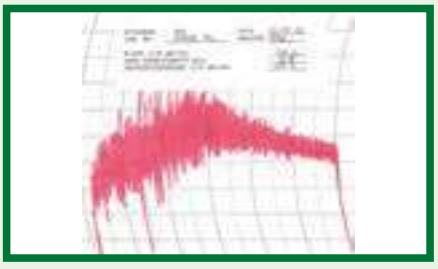
Country of origin	Russia Average							RSA Crop Average						
Class and Grade bread wheat	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	*4*	*15*	*3*	*10*	*10*	*25*	*67*	*24*	*15*	*15*	*6*	*9*	*1*	*70*
ALVEOGRAM														
Strength (S), cm²	48.7	33.5	31.7	36.2	32.5	30.9	33.6	46.1	34.2	34.1	28.3	37.6	26.9	38.1
Stability (P), mm	76	84	108	78	80	79	81	77	71	79	72	72	50	75
Distensibility (L), mm	139	80	53	92	79	72	81	148	136	113	103	139	163	133
P/L	0.55	1.22	2.06	0.86	1.04	1.15	1.11	0.53	0.55	0.75	0.71	0.54	0.31	0.59
														
EXTENSOGRAM														
Strength, cm²	119	92	81	107	94	92	96	122	87	85	73	94	74	98
Max. height, BU	387	430	403	468	436	430	433	405	331	351	314	344	238	360
Extensibility, mm	224	158	147	170	158	158	163	218	191	176	166	198	219	196
														
MIXOGRAM														
Peak time, min	3.2	4.5	3.3	4.4	4.2	4.6	4.3	2.8	2.6	2.8	2.7	2.5	3.1	2.7
Absorption, %	62.8	59.9	59.4	60.1	59.4	59.8	60.0	62.0	60.4	59.6	58.8	60.8	60.8	60.7
														
MYCOTOXINS														
Afla G_1 (µg/kg)	ND							ND						
Afla B_1 (µg/kg)	ND							ND						
Afla G_2 (µg/kg)	ND							ND						
Afla B_2 (µg/kg)	ND							ND						
Fum B_1 (µg/kg)	ND							ND						
Fum B_2 (µg/kg)	ND							ND						
Fum B_3 (µg/kg)	ND							ND						
Deoxynivalenol (µg/kg) [max. value]	<100 [456]							<100 [361]						
15-ADON (µg/kg)	ND							ND						
Ochratoxin A (µg/kg)	ND							ND						
Zearalenone (µg/kg)	ND							ND						
HT-2 (µg/kg)	<20 [21]							ND						
T-2 Toxin (µg/kg)	ND							ND						
No. of samples	***20***							***40***						

2014/2015 IMPORTED WHEAT QUALITY - UKRAINE (1 Oct 2014 to 30 Sep 2015)

2014/2015 Imported Wheat Quality Versus 2014/2015 RSA Wheat Quality

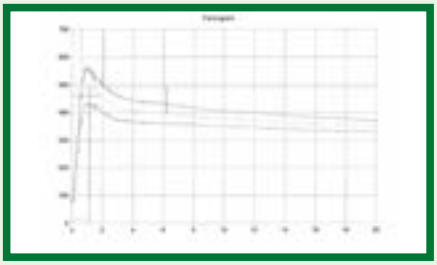
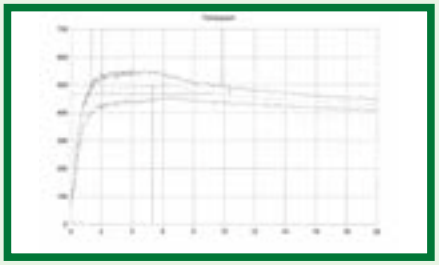
Country of origin	Ukraine Average							RSA Crop Average						
Class and Grade bread wheat	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	*1*	*22*	*4*	*1*	*2*	*2*	*32*	*105*	*59*	*42*	*17*	*89*	*25*	*337*
WHEAT														
GRADING														
Protein (12% mb), %	12.41	11.56	10.70	10.83	11.16	10.86	11.39	12.91	11.53	10.78	9.68	11.51	11.35	11.75
Moisture, %	11.9	11.6	11.1	11.1	11.2	10.6	11.5	11.0	11.1	11.1	12.3	11.2	11.3	11.2
Falling number, sec	322	329	330	402	376	315	333	364	369	375	375	369	364	368
1000 Kernel mass (13% mb), g	38.3	39.5	38.9	37.4	40.2	37.0	39.2	38.0	39.6	40.3	41.9	38.2	38.2	38.8
Hlm (dirty), kg/hl	80.6	80.6	80.3	78.9	79.6	79.2	80.4	80.9	80.7	80.6	81.0	79.1	78.6	80.2
Screenings (<1.8 mm sieve), %	1.30	1.96	2.58	3.13	1.17	3.40	2.10	1.17	1.26	1.32	1.42	2.19	2.01	1.55
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	0.00	0.00
Foreign matter, %	0.17	0.10	0.19	0.15	0.15	0.10	0.12	0.09	0.07	0.09	0.07	0.18	0.12	0.11
Other grain & unthreshed ears, %	0.23	0.50	0.48	0.32	1.24	0.35	0.52	0.42	0.44	0.43	0.38	0.98	0.58	0.58
Heat damaged kernels, %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00
Immature kernels, %	0.04	0.03	0.03	0.00	0.00	0.00	0.02	0.13	0.05	0.05	0.04	0.10	0.03	0.09
Insect damaged kernels, %	0.00	0.06	0.11	0.08	0.00	0.24	0.07	0.44	0.71	0.76	0.85	1.71	1.22	0.94
Heavily frost damaged kernels, %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sprouted kernels, %	0.00	0.05	0.02	0.00	0.08	0.00	0.04	0.04	0.04	0.04	0.10	0.10	0.08	0.06
Total damaged kernels, %	0.04	0.14	0.16	0.08	0.08	0.24	0.14	0.62	0.79	0.85	0.99	1.92	1.34	1.09
Combined deviations, %	1.74	2.70	3.41	3.68	2.64	4.09	2.87	2.29	2.57	2.69	2.86	5.27	4.05	3.34
Field fungi, %	0.12	0.16	0.27	0.00	0.75	0.12	0.20	0.23	0.16	0.09	0.06	0.11	1.76	0.27
Storage fungi, %	0.00	0.00	0.07	0.12	0.00	0.08	0.02	0.01	0.01	0.00	0.00	0.01	0.00	0.01
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	0.00	0.00
Noxious seeds (*Crotalaria spp., etc.*)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Noxious seeds (*Argemone mexicana, etc.*)	0	0	1	6	0	14	1	0	0	0	0	0	0	0
Live insects	No	No	No	No	No	No	No	No	No	No	No	No	Yes	No
Undesirable odour	No	No	No	No	No	No	No	No	No	No	No	No	No	No
	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	*1*	*22*	*4*	*1*	*2*	*2*	*32*	*24*	*15*	*15*	*6*	*9*	*1*	*70*
BÜHLER EXTRACTION, %	72.5	73.2	72.8	71.3	73.3	71.8	73.0	73.5	73.6	73.3	73.9	72.8	70.9	73.4
FLOUR														
Colour, KJ	-2.4	-2.9	-3.0	-3.0	-2.6	-3.1	-2.9	-3.3	-3.3	-3.5	-3.7	-3.2	-2.2	-3.3
Colour, Minolta CM5 (dry)														
L*	93.95	93.5	93.45	93.31	93.44	93.47	93.51	93.66	93.72	93.93	94.07	93.77	92.98	93.77
a*	0.44	0.47	0.48	0.47	0.46	0.49	0.47	0.47	0.45	0.41	0.39	0.41	0.56	0.44
b*	9.77	10.19	10.46	11.64	10.41	10.65	10.30	9.58	9.81	9.87	9.49	9.82	9.78	9.72
Ash (db), %	0.51	0.52	0.52	0.52	0.47	0.53	0.52	0.58	0.59	0.58	0.58	0.61	0.65	0.59
Protein (12% mb), %	11.1	10.3	9.5	9.6	9.9	9.8	10.1	11.9	10.5	9.7	8.9	10.9	10.9	10.7
Wet Gluten (14% mb), %	29.1	26.7	23.9	24.8	26.6	24.6	26.2	31.8	28.9	25.7	24.1	30.2	27.2	28.9
Dry Gluten (14% mb), %	10.2	9.1	8.1	8.4	8.9	8.6	9.0	10.8	9.7	8.6	8.3	10.4	9.2	9.8
Gluten Index	94	92	96	97	90	98	93	88	86	88	90	86	94	88
100g BAKING TEST														
Baking water absorption, %	61.0	60.1	59.3	59.4	59.7	59.6	60.0	61.8	60.3	59.4	58.7	60.7	60.3	60.6
Loaf volume, cm^3	816	837	789	847	778	810	825	938	875	831	786	917	1132	889
Evaluation	2	0	0	0	1	0	0	1	0	0	0	0	0	0
FARINOGRAM														
Water absorption, %	56.6	57.0	56.3	55.8	59.0	56.2	57.0	60.6	59.2	58.7	58.0	59.7	58.0	59.5
Development time, min	2.7	2.1	1.6	1.5	2.2	2.0	2.1	6.8	4.9	3.8	3.8	5.5	4.3	5.3
Stability, mm	18.9	8.7	3.5	2.6	8.0	3.6	7.8	10.1	6.9	7.6	6.6	8.4	6.7	8.3
Mixing tolerance index, BU	22	33	55	62	22	59	37	30	41	35	39	36	39	35
														

2014/2015 Imported Wheat Quality Versus 2014/2015 RSA Wheat Quality

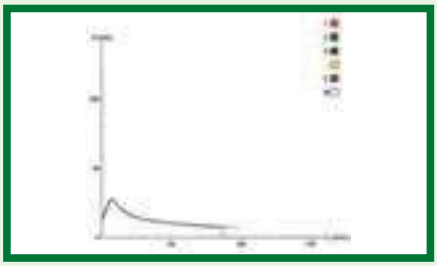
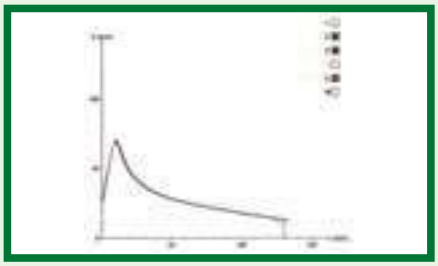
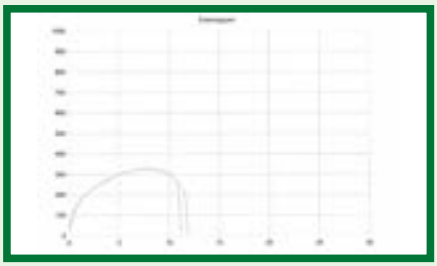
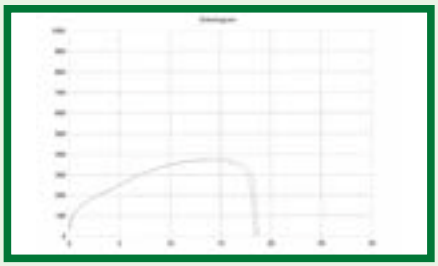
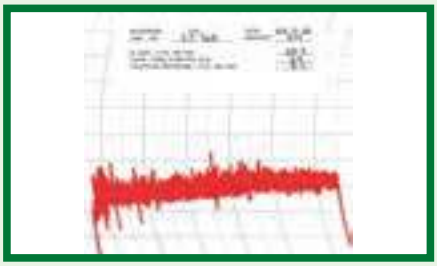
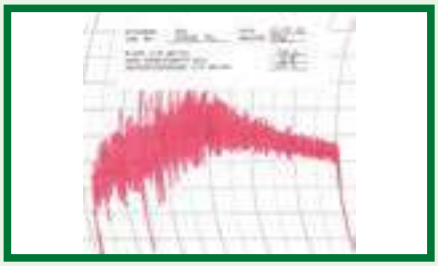
Country of origin	Ukraine Average							RSA Crop Average						
Class and Grade bread wheat	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	*1*	*22*	*4*	*1*	*2*	*2*	*32*	*24*	*15*	*15*	*6*	*9*	*1*	*70*
ALVEOGRAM														
Strength (S), cm²	47.6	35.4	30.6	28.6	33.8	32.1	34.6	46.1	34.2	34.1	28.3	37.6	26.9	38.1
Stability (P), mm	80	80	77	81	92	80	80	77	71	79	72	72	50	75
Distensibility (L), mm	124	93	76	62	80	75	89	148	136	113	103	139	163	133
P/L	0.65	0.89	1.06	1.31	1.15	1.11	0.95	0.53	0.55	0.75	0.71	0.54	0.31	0.59
														
EXTENSOGRAM														
Strength, cm²	122	94	88	87	69	99	93	122	87	85	73	94	74	98
Max. height, BU	509	408	412	445	327	441	410	405	331	351	314	344	238	360
Extensibility, mm	176	168	157	142	150	165	164	218	191	176	166	198	219	196
														
MIXOGRAM														
Peak time, min	5.3	4.1	4.6	5.0	3.6	4.8	4.2	2.8	2.6	2.8	2.7	2.5	3.1	2.7
Absorption, %	61.0	60.1	59.3	59.4	59.7	59.6	60.0	62.0	60.4	59.6	58.8	60.8	60.8	60.7
														
MYCOTOXINS														
Afla G_1 (µg/kg)	ND							ND						
Afla B_1 (µg/kg)	ND							ND						
Afla G_2 (µg/kg)	ND							ND						
Afla B_2 (µg/kg)	ND							ND						
Fum B_1 (µg/kg)	ND							ND						
Fum B_2 (µg/kg)	ND							ND						
Fum B_3 (µg/kg)	ND							ND						
Deoxynivalenol (µg/kg) [max. value]	<100 [316]							<100 [361]						
15-ADON (µg/kg)	ND							ND						
Ochratoxin A (µg/kg)	ND							ND						
Zearalenone (µg/kg)	ND							ND						
HT-2 (µg/kg)	ND [<20]							ND						
T-2 Toxin (µg/kg)	ND							ND						
No. of samples	***10***							***40***						

2014/2015 IMPORTED WHEAT QUALITY - USA (1 Oct 2014 to 30 Sep 2015)

2014/2015 Imported Wheat Quality Versus 2014/2015 RSA Wheat Quality

Country of origin	USA Average							RSA Crop Average						
Class and Grade bread wheat	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	-	-	*1*	*2*	*1*	*2*	*6*	*105*	*59*	*42*	*17*	*89*	*25*	*337*
WHEAT														
GRADING														
Protein (12% mb), %	-	-	10.19	9.17	9.67	10.53	9.88	12.91	11.53	10.78	9.68	11.51	11.35	11.75
Moisture, %	-	-	12.3	12.2	12.2	11.8	12.1	11.0	11.1	11.1	12.3	11.2	11.3	11.2
Falling number, sec	-	-	305	290	305	275	290	364	369	375	375	369	364	368
1000 Kernel mass (13% mb), g	-	-	31.8	34.2	32.7	31.6	32.7	38.0	39.6	40.3	41.9	38.2	38.2	38.8
Hlm (dirty), kg/hl	-	-	77.0	77.3	77.5	78.1	77.6	80.9	80.7	80.6	81.0	79.1	78.6	80.2
Screenings (<1.8 mm sieve), %	-	-	2.63	2.42	4.62	3.38	3.14	1.17	1.26	1.32	1.42	2.19	2.01	1.55
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, %	-	-	0.10	0.80	0.60	0.15	0.43	0.09	0.07	0.09	0.07	0.18	0.12	0.11
Other grain & unthreshed ears, %	-	-	0.50	0.45	0.58	0.58	0.52	0.42	0.44	0.43	0.38	0.98	0.58	0.58
Heat damaged kernels, %	-	-	0.00	0.00	0.08	0.66	0.23	0.00	0.00	0.01	0.01	0.00	0.01	0.00
Immature kernels, %	-	-	0.00	0.00	0.00	0.00	0.00	0.13	0.05	0.05	0.04	0.10	0.03	0.09
Insect damaged kernels, %	-	-	0.20	0.31	0.36	0.04	0.21	0.44	0.71	0.76	0.85	1.71	1.22	0.94
Heavily frost damaged kernels, %	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sprouted kernels, %	-	-	0.24	0.52	0.40	0.24	0.36	0.04	0.04	0.04	0.10	0.10	0.08	0.06
Total damaged kernels, %	-	-	0.44	0.83	0.84	0.94	0.80	0.62	0.79	0.85	0.99	1.92	1.34	1.09
Combined deviations, %	-	-	3.67	4.50	6.64	5.05	4.90	2.29	2.57	2.69	2.86	5.27	4.05	3.34
Field fungi, %	-	-	1.88	1.02	0.60	0.55	0.94	0.23	0.16	0.09	0.06	0.11	1.76	0.27
Storage fungi, %	-	-	0.08	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.01
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
Noxious seeds (*Crotalaria spp., etc.*)	-	-	0	0	0	0	0	0	0	0	0	0	0	0
Noxious seeds (*Argemone mexicana, 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	Yes	No
Undesirable odour	-	-	No	No	No	No	No	No	No	No	No	No	No	No
	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	-	-	*1*	*2*	*1*	*2*	*6*	*24*	*15*	*15*	*6*	*9*	*1*	*70*
BÜHLER EXTRACTION, %	-	-	71.0	71.0	68.7	73.5	71.4	73.5	73.6	73.3	73.9	72.8	70.9	73.4
FLOUR														
Colour, KJ	-	-	-2.4	-2.9	-2.7	-2.3	-2.6	-3.3	-3.3	-3.5	-3.7	-3.2	-2.2	-3.3
Colour, Minolta CM5 (dry)														
L*	-	-	94.62	94.73	94.80	94.22	94.55	93.66	93.72	93.93	94.07	93.77	92.98	93.77
a*	-	-	0.30	0.31	0.26	0.46	0.35	0.47	0.45	0.41	0.39	0.41	0.56	0.44
b*	-	-	8.55	8.44	8.57	9.40	8.80	9.58	9.81	9.87	9.49	9.82	9.78	9.72
Ash (db), %	-	-	0.48	0.44	0.51	0.52	0.48	0.58	0.59	0.58	0.58	0.61	0.65	0.59
Protein (12% mb), %	-	-	8.3	7.3	7.6	8.1	7.8	11.9	10.5	9.7	8.9	10.9	10.9	10.7
Wet Gluten (14% mb), %	-	-	21.1	16.0	19.5	21.8	20.0	31.8	28.9	25.7	24.1	30.2	27.2	28.9
Dry Gluten (14% mb), %	-	-	7.0	5.0	6.2	7.1	6.5	10.8	9.7	8.6	8.3	10.4	9.2	9.8
Gluten Index	-	-	86	-	92	83	86	88	86	88	90	86	94	88
100g BAKING TEST														
Baking water absorption, %	-	-	58.3	57.7	57.9	58.2	58.0	61.8	60.3	59.4	58.7	60.7	60.3	60.6
Loaf volume, cm^3	-	-	778	665	789	725	724	938	875	831	786	917	1132	889
Evaluation	-	-	0	0	0	0	0	1	0	0	0	0	0	0
FARINOGRAM														
Water absorption, %	-	-	49.7	49.2	50.0	49.5	49.5	60.6	59.2	58.7	58.0	59.7	58.0	59.5
Development time, min	-	-	1.2	1.0	1.2	1.1	1.1	6.8	4.9	3.8	3.8	5.5	4.3	5.3
Stability, mm	-	-	1.6	1.2	1.2	1.5	1.4	10.1	6.9	7.6	6.6	8.4	6.7	8.3
Mixing tolerance index, BU	-	-	89	129	143	100	115	30	41	35	39	36	39	35
														

2014/2015 Imported Wheat Quality Versus 2014/2015 RSA Wheat Quality

Country of origin	USA Average							RSA Crop Average						
Class and Grade bread wheat	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	-	-	1	2	1	2	6	24	15	15	6	9	1	70
ALVEOGRAM														
Strength (S), cm²	-	-	15.0	10.6	13.3	12.1	12.3	46.1	34.2	34.1	28.3	37.6	26.9	38.1
Stability (P), mm	-	-	33	32	34	30	32	77	71	79	72	72	50	75
Distensibility (L), mm	-	-	111	64	82	96	86	148	136	113	103	139	163	133
P/L	-	-	0.30	0.50	0.41	0.32	0.39	0.53	0.55	0.75	0.71	0.54	0.31	0.59
														
EXTENSOGRAM														
Strength, cm²	-	-	65	56	50	55	56	122	87	85	73	94	74	98
Max. height, BU	-	-	368	372	296	323	342	405	331	351	314	344	238	360
Extensibility, mm	-	-	126	107	120	118	116	218	191	176	166	198	219	196
														
MIXOGRAM														
Peak time, min	-	-	4.7	3.0	4.7	3.9	3.9	2.8	2.6	2.8	2.7	2.5	3.1	2.7
Absorption, %	-	-	58.3	57.7	57.9	58.2	58.0	62.0	60.4	59.6	58.8	60.8	60.8	60.7
														
MYCOTOXINS														
Afla G_1 (µg/kg)	ND							ND						
Afla B_1 (µg/kg)	ND							ND						
Afla G_2 (µg/kg)	ND							ND						
Afla B_2 (µg/kg)	ND							ND						
Fum B_1 (µg/kg)	ND							ND						
Fum B_2 (µg/kg)	ND							ND						
Fum B_3 (µg/kg)	ND							ND						
Deoxynivalenol (µg/kg) [max. value]	924 [1 686]							<100 [361]						
15-ADON (µg/kg)	ND							ND						
Ochratoxin A (µg/kg)	ND							ND						
Zearalenone (µg/kg) [max. value]	ND							ND						
HT-2 (µg/kg)	63 [113]							ND						
T-2 Toxin (µg/kg)	ND							ND						
No. of samples	***4***							***40***						

sanas
South African National Accreditation System

CERTIFICATE OF ACCREDITATION

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

SOUTHERN AFRICAN GRAIN LABORATORY NPC
Co. Reg. No.: 1997/018518/08

Facility Accreditation Number: **T0116**

is a South African National Accreditation System accredited Testing laboratory provided that all SANAS 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 17025:2005

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

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

Mr R Josias
Chief Executive Officer
Effective Date: 01 November 2014
Certificate Expires: 31 October 2019

ANNEXURE A

SCHEDULE OF ACCREDITATION

Facility Number: T0116

Permanent Address of Laboratory: Southern African Grain Laboratory (NPC) Grain Building 477 Witherite Road The Willows 0040	**Technical Signatories:**	Ms J Nortjé (All) Ms M Fourie (In-house method 012) Ms M Hammes (Chemical) Ms A de Jager (Nutrients & Contaminants) Ms W Louw (In-House Methods 001, 002, 003, 010, and 026) Ms D Moleke (Rheological) Ms I Terblanche (Rheological) Ms H Meyer (Chemical, Nutrients, Contaminants & Grading) Ms J Kruger (Chemical, excluding In-house method 012) Mr L Badenhorst (Grading) Ms P Modiba (Chemical) Ms M Motlanthe (In-house method 001, 003)
Postal Address: Postnet Suite # 391 Private Bag X 1 The Willows 0041	**Nominated Representative:** **Management Representative:**	Ms S du Preez Ms W Louw
Tel: (012) 807-4019 Fax: (086) 216-7672 E-mail: info@sagl.co.za	Issue No.: Date of Issue: Expiry Date:	24 04 March 2015 31 October 2019

Materials / Products Tested	Type of Tests / Properties Measured, Range of Measurement	Standard Specifications, Equipment / Technique Used
CHEMICAL		
Ground Barley	Moisture (Oven Method)	Analytical EBC Method 3.2, Latest Edition (2hour; 130˚C)
Cereal and cereal products specifically- wheat, rice, (hulled paddy), barley, millet, rye and oats as grains, 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 (1hour; 130˚C) (72 hour, 103°C)

Original Date of Accreditation: 01 November 1999

Field Manager

ANNEXURE A

Facility No.: T0116
Date of Issue: 04 March 2015
Expiry Date: 31 October 2019

Materials / Products Tested	Type of Tests / Properties Measured, Range of Measurement	Standard Specifications, Equipment / Technique Used
All flours, cereal grains, oilseeds and animal feeds	Nitrogen and protein (Combustion method - Dumas)	AACCI 46-30.01, Latest Edition
Food stuff	Dietary fibre (total)	In-house method 012
Food stuff and feeds	Carbohydrates (by difference) (calculation) Energy value (calculation) Total digestible nutrition value (calculation)	SOP MC 23
Food stuff and feeds	Determination of ash	In-house method 011
Wheat kernels	Moisture (Oven method)	Government Gazette Wheat Grading Regulation, Latest Edition (72 hour, 103ºC)
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 No 107/1, Latest Edition
NUTRIENTS & CONTAMINANTS		
Vitamin fortified food and feed products and fortification mixes grain based	Vitamin A as all trans Retinol (Saponification) (HPLC)	In-house method 001
Vitamin fortified food and feed products and fortification mixes grain based	Thiamine Mononitrate (HPLC) Riboflavin (HPLC) Nicotinamide (HPLC) Pyridoxine Hydrochloride (HPLC)	In-house method 002
Vitamin fortified food and feed products and fortification mixes grain based	Folic Acid (HPLC)	In-house method 003

Original Date of Accreditation: 01 November 1999

Field Manager

ANNEXURE A

Facility No.: T0116
Date of Issue: 04 March 2015
Expiry Date: 31 October 2019

Materials / Products Tested	Type of Tests / Properties Measured, Range of Measurement	Standard Specifications, Equipment / Technique Used
Grain based food and feed products (fortified and unfortified) and fortification mixes	Total sodium (Na) Total Iron (Fe) Total zinc (Zn)	In-house method 010
Food and feed	Multi-Mycotoxin: - Aflatoxin G_1, B_1, G_2, B_2 and total - Deoxynivalenol (DON), 15-ADON - Fumonisin B_1, B_2, B_3 - Ochratoxin A - T2, HT-2 - Zearalenone	In-house method 026
GRADING		
Maize	Defective kernels (white maize/yellow maize)	Government Gazette Maize Regulation, Latest Edition
Cereal as grains (wheat, barley, rye and oats)	Hectolitre mass (Kern222)	ISO 7971-3, Latest Edition
Wheat	Screenings	Government Gazette Wheat Grading Regulation, Latest Edition
RHEOLOGICAL		
Wheat flour	Alveograph (Rheological properties)	ICC No 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 Page 3 of 3

ISSUED BY THE SOUTH AFRICAN NATIONAL ACCREDITATION SYSTEM

Field Manager

CERTIFICATE
SERTIFIKAAT

Southern African Grain Laboratory NPC

The Willows, Pretoria

Feeds / Voere

27 April 2015 — 22 February 2016

Ash **Crude Fibre** **Dietary Fibre** **Fat**

Moisture **Nx6.25-Protein** **Zn**

FOR AGRILASA

AgriLASA

Prepared and published by Thistle QA on behalf of, and under direction of, AGRILASA. Printed 31/03/2016

PROFICIENCY TESTING PROGRAMS

CERTIFICATE OF PARTICIPATION

This certificate is awarded to:

SOUTHERN AFRICAN GRAIN LABORATORY NPC

THE WILLOWS – PRETORIA – SOUTH AFRICA

for its participation in BIPEA's interlaboratory comparisons for the 2015-2016 annual series.

June 30, 2016 - Paris - France

BIPEA Member

BIPEA Director

Certificate n° 15-16 / 11119

AACC INTERNATIONAL

RECOGNITION OF ANALYTICAL PERFORMANCE

Analysis of Hard Wheat Flour

South African Grain Laboratory
Pretoria, SOUTH AFRICA

Achieved Outstanding Accuracy and Precision for the year 2015
in check samples including the following analyses:

Moisture, Protein, Ash, Falling Number

Executive Vice President

President

AACC INTERNATIONAL

RECOGNITION OF ANALYTICAL PERFORMANCE

Analysis of Mixograph

Southern African Grain Laboratory
Pretoria, SOUTH AFRICA

Achieved Satisfactory Accuracy and Precision for the year 2015
in check samples including the following analyses:

Moisture, Peak time, Peak ht, 8 min ht, Slope

Executive Vice President

President

AACC INTERNATIONAL

RECOGNITION OF ANALYTICAL PERFORMANCE

Analysis of Feed

Southern African Grain Laboratory
Pretoria, SOUTH AFRICA

Achieved Outstanding Accuracy and Precision for the year 2015
in check samples including the following analyses:

Moisture, Protein, Ash, Fat (EE), Crude Fiber, Calcium

DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES

NO. R. 64 **29 JANUARY 2016**

AGRICULTURAL PRODUCT STANDARDS ACT, 1990
(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 No. R1186 of December 2010.

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% 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 12,7 mm long and 1,8 mm wide with rounded ends. The spacing between the slots in the same row must be 2, 43 mm wide and the spacing between the rows of slots must be 2,0 mm wide. The slots must be alternately 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 infected 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 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 stones, 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 Grade 1, Grade 2, Grade 3, Grade 4 or Utility Grade 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) Grade 1.

(b) Grade 2.

(c) Grade 3.

(d) Grade 4; and

(e) Utility grade.

(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) Grade 1 if the nature of deviation, specified in column 1 of Table 1 of the Annexure, in that consignment does not exceed the percentage specified in column 2 of the said table opposite the deviation concerned;

(b) 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 3 of the said table opposite the deviation concerned;

(c) 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 4 of the said table opposite the deviation concerned;

(d) Grade 4 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; and

(e) Utility 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 6 of the said table opposite the deviation concerned.

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

(a) Grade 1 - 77 kg.

(b) Grade 2 - 76 kg.

(c) Grade 3 - 74 kg.

(d) Grade 4 - 72 kg; and

(e) Utility Grade - 70 kg.

(3) (a) Grade 1, Grade 2 and Grade 3 shall have a minimum falling number value of not less than 250 seconds.

(b) Grade 4 shall have a minimum falling number value of not less than 200 seconds.

(c) Utility Grade shall have a minimum falling number value of not less than 150 seconds.

(d) 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 Grade 1, Grade 2 and Grade 3, as the case may be.

(4) The minimum protein content (on a 12 percent moisture basis) for the different grades shall be as follows:

(a) Grade 1 - 12 percent.

(b) Grade 2 - 11 percent.

(c) Grade 3 - 10 percent.

(d) Grade 4 - 9 percent; and

(e) Utility Grade - 8 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) 1 in the case of Grade 1;

(ii) 2 in the case of Grade 2;

(iii) 3 in the case of Grade 3;

(iv) 4 in the case of Grade 4; and

(v) UT in the case of Utility Grade.

PART III

SAMPLING

Taking of sample

9. (1) A 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 to be 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, un threshed 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 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 of not exceeding R50 000 or to imprisonment for a period not exceeding two years, or to both that fine or imprisonment.

ANNEXURE

TABLE 1

STANDARDS FOR GRADES OF BREAD WHEAT

Nature of deviation	Maximum percentage permissible deviation (m/m)				
	Grade 1	Grade 2	Grade 3	Grade 4	Utility Grade
1	3	4	5	6	7
(a) Heavily frost-damaged kernel	5	5	5	5	10
(b) Field fungi infected kernels	2	2	2	2	2
(c) Storage fungi infected kernels	0,5	0,5	0,5	0,5	0,5
(d) Screenings	3	3	3	4	10
(e) Other grain and unthreshed ears	1	1	1	1	4
(f) Gravel, stones and turf.	0,5	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	3
(h) Heat-damaged kernels	0,5	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	5
(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	10