

SOUTH AFRICAN

WHEAT CROP
QUALITY REPORT

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SOUTH AFRICAN

COMMERCIAL WHEAT QUALITY FOR THE 2009/2010 SEASON

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Introduction

The final wheat production of 1 958 000 tons for the 2009/2010 season, was 8 % lower than the previous season's 2 130 000 tons. This is 3 % lower than the 10 year average of 2 017 835 tons (2000/2001 to 2009/2010 seasons). A total area of 642 500 hectares was utilized for wheat production. (Figures obtained from the Crop Estimates Committee).

The whole wheat protein average was 11.7 % compared to the 12.0 % of the previous season, which is also the same as the ten year average. The average hectolitre mass was 79.9 kg/hl. This value includes the addition of 2 kg/hl to all individually obtained values as per the Hectolitre mass Dispensation (please see Methods page 53). The percentage of samples in this survey graded as B1 increased from 27 % the previous season to 33 % this season.

High levels of rainfall during harvesting in several parts of the Swartland in the Western Cape resulted in sprouting and low falling numbers. No major problems were experienced with the climatic conditions and rainfall patterns in the rest of the production regions.

Differences in the flour and dough qualities between the winter rainfall, summer rainfall and irrigation areas were observed as in previous seasons. The overall flour and dough quality was average to good.

The mixograph peak time of flour milled on the Quadromat mill averaged 2.9 minutes, varying from 2.5 minutes in the Western Cape to 3.3 minutes in the Free State. The straight-dough optimized 100-gram baking test showed little variation in volume according to the protein content. The average relationship between protein and bread volume was excellent.

During the harvesting season, a representative sample of each delivery of wheat is taken according to the prescribed wheat regulation. A sub-sample of each of these grading samples is collected in a bin according to grade and class per silo bin at each silo. This composite bin sample is then divided and a 5 kg sample is sent to the Southern African Grain Laboratory (SAGL) for the annual wheat crop quality survey. SAGL selected 480 samples representing the production of wheat in all the different production regions.

The samples, are fully graded and thousand kernel mass is done. Small samples are milled on the quadromat mill, followed by a mixogram analysis.

Cultivar identification is done on these samples and sale figures of seed sold by the commercial grain silo owners are obtained.

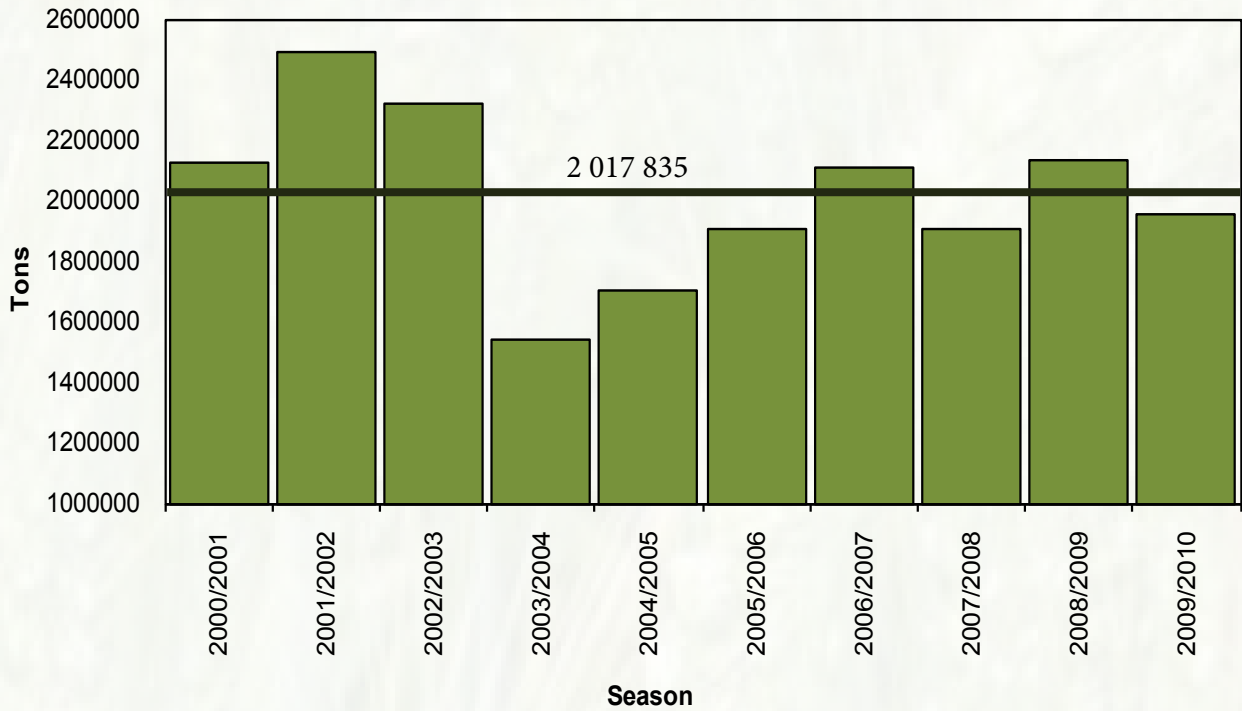
Composite samples are made up per class and grade for each production region and milled on the Bühler mill. Rheological tests, namely a mixogram, farinogram, alveogram, extensogram and 100-gram baking test, are then performed.

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 report is available from June each year (with the option to download the report from the website).

Summaries comparing the quality of the local wheat for the 2007/2008 and 2009/2010 as well as the 2008/2009 and 2009/2010 seasons are provided.

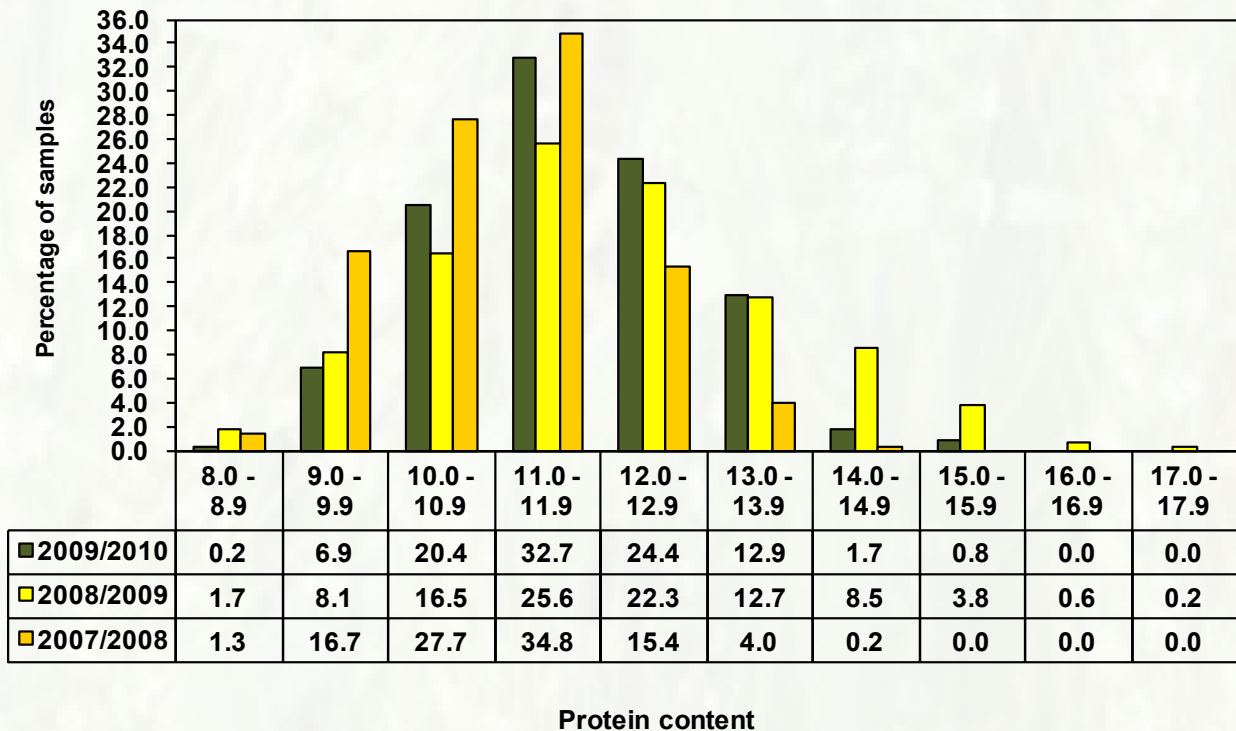
WHEAT PRODUCTION IN THE RSA OVER
THE LAST 10 SEASONS

Wheat Production RSA



DIFFERENCES IN THE DISTRIBUTION OF PROTEIN
CONTENT OVER THE LAST 3 SEASONS

Distribution of protein content



Crop quality of the 2009/2010 season

The protein graph of the wheat produced in the 2009/2010 season showed a normal distribution around the 11.0 - 11.9 % protein level (see page 2). The highest percentage of samples (32.7 %) had protein contents ranging from 11.0 - 11.9 %. The second highest percentage of 24.4 % was for protein contents 12.0 - 12.9 % and thirdly 20.4 % for 10.0 - 10.9 % protein content. The irrigation areas had the highest average protein content of 12.2 % and the winter rainfall area the lowest with 11.1 %.

No significant differences were observed in the average hectolitre mass between the different production regions. The weighted average thousand kernel mass of 39.1 g was almost 1 g higher than the previous season.

The weighted average screenings (1.8 mm sieve) was 1.63 % compared to the 1.72 % in the 2008/2009 season.

The weighted average falling number was 367 seconds. Twenty eight samples gave falling number values of less than 250 seconds and of these, eighteen had falling number values lower than 220 seconds. These samples were mainly from the Western Cape (60 %).

The weighted mixogram peak time on flour from the Quadromat mill averaged 2.9 minutes, equal to the ten year average. The weighted mixogram peak time of the flour from the Bühler mill averaged 2.6 minutes.

The weighted average Bühler extraction was 74.7 %, with a weighted average Kent Jones colour of -2.2 KJ.

The farinogram had a weighted average water absorption of 61.0 % (61.1 % the previous season) and a weighted average development time of 3.5 minutes (4.0 minutes last season). The weighted average alveogram strength was 35.5 cm² and the weighted average P/L value 1.17 (38.0 cm² and 0.90 the previous season). The weighted average extensogram strength was 83 cm² (90 cm² previous season).

The loaves baked using the 100 g straight-dough optimized bread making method, which refers to the relationship between the protein content and the bread volume, was evaluated and scored from “Excellent” to “Very Good”.

Wheat grades

The 480 representative crop samples were graded as follows: 33 % was graded B1, 29 % was graded B2, 17 % was graded B3, 6 % was graded B4, 12 % UT (Utility Grade) and 3 % COW (Class Other Wheat). The adjustment of the hectolitre mass results by adding 2 kg/hl according to the Dispensation (please see Methods page 53), contributed to the increase in the percentage samples graded B1, compared to the 2008/2009 season.

Grade B1 wheat in the Free State province amounted to 45 % (47 % the previous season) and grade B1 in other summer rainfall and irrigation areas amounted to 36 % (31 % in the previous season). In the irrigation areas 43 % (21 % in the previous season) of the wheat graded as B1 and in the Western Cape Province 15 % graded as B1 (11 % in the previous season).

Cultivars

In the Western Cape, SST 027 dominated the market (36 %). SST 015 (29 %) and SST 88 (21 %) were also popular cultivars. The Western Cape produced 35 % of all wheat grown in South Africa during the 2009/2010 season.

Regions 21 to 24 of the Free State were dominated by PAN 3120 (24 %). Elands dominated regions 25 to 28 (36 %). SST 835, PAN 3118, SST 356, Matlabas and Gariep were also popular cultivars.

Farmers in the Vaal and Orange River areas preferred SST 835 (39 %), CRN 826 (19 %) and Duzi (15 %).

The most preferred cultivar in the North West was SST 835 (47 %), followed by SST 843 (15 %) and CRN 826 (13 %).

In Limpopo, Gauteng and Mpumalanga SST 835 (41 %) was the dominant cultivar followed by Duzi (23 %).

The above information was calculated from the cultivar identification done on all 480 crop samples.

Mycotoxins

Mycotoxins, as secondary metabolites of moulds or fungi, can cause toxic effects in humans and animals consuming contaminated foods or feeds. Thirty samples (representing different regions) were selected randomly for mycotoxin analyses. These samples were tested for aflatoxin, deoxynivalenol and ochratoxin A.

The highest Aflatoxin content found was 4 ppb ($\mu\text{g}/\text{kg}$). In accordance with Act 54 of 1972, Foodstuffs, Cosmetics and Disinfectants, the allowable level of total aflatoxin is 10 ppb ($\mu\text{g}/\text{kg}$). In accordance with Act 36 of 1947, Fertilizers, Farm Feeds, Agricultural and Stock Remedies, the allowable level of total aflatoxin is 10 to 50 ppb ($\mu\text{g}/\text{kg}$).

The average deoxynivalenol (DON) content was 0.05 ppm (mg/kg) with the highest value being 0.48 ppm.

The average ochratoxin A content was 0.17 ppb ($\mu\text{g}/\text{kg}$) with the highest report value being 1 ppb.

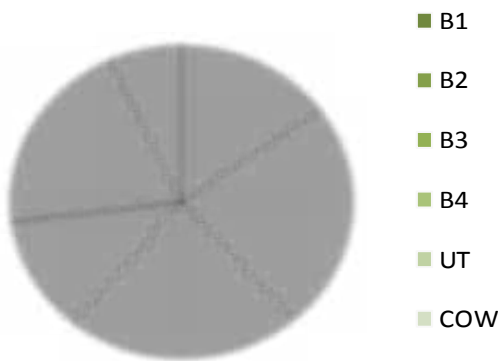
Quantity of imported wheat for the 2008/2009 season (previous season)

During the 2008/2009 season, 1 201 053 tons of wheat were imported for RSA. The biggest quantity was imported from Germany, namely 518 435 tons, followed by Argentina with 368 739 tons, USA with 113 434 tons, Australia with 74 714 tons, Canada with 54 831 tons, Brazil with 44 366 tons, then Ukraine with 13 521 tons and Poland with 13 013 tons. (SAGIS web site).

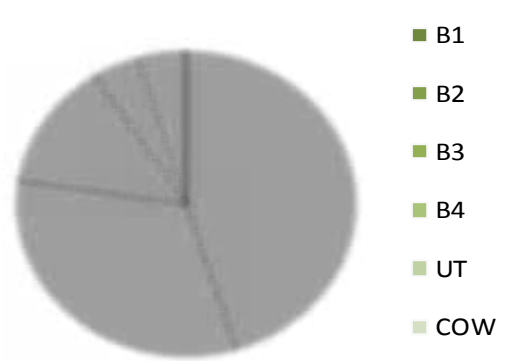
For grading as well as dough and baking quality of the imported wheat, please refer to pages 56 to 67. No samples were received for analysis from Poland and Ukraine.

Wheat class and grades per production area

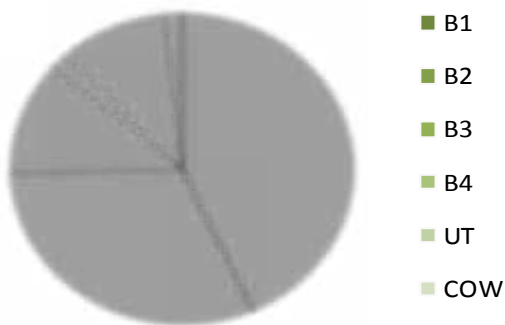
Number of samples per class and grade in the winter rainfall area



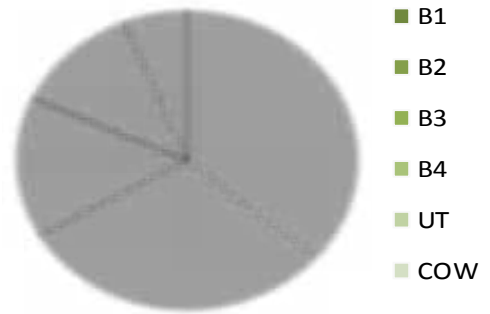
Number of samples per class and grade in the summer rainfall area



Number of samples per class and grade in the irrigation areas

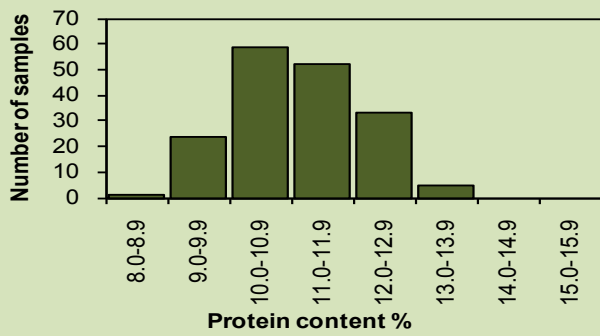


Number of samples per class and grade in the other summer rainfall and irrigation areas

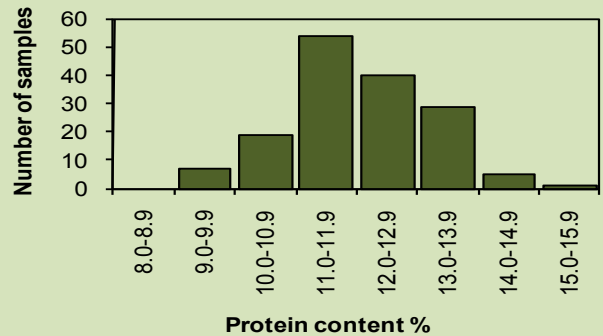


Protein distribution graphs per production area

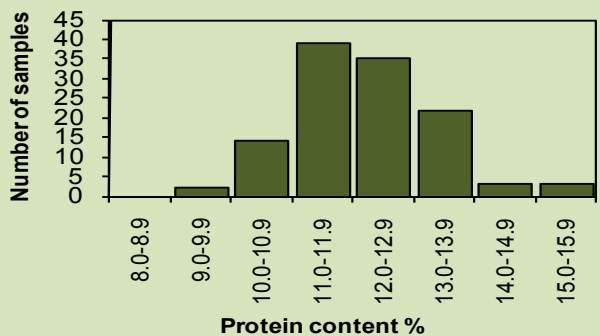
Protein distribution of wheat in the winter rainfall area



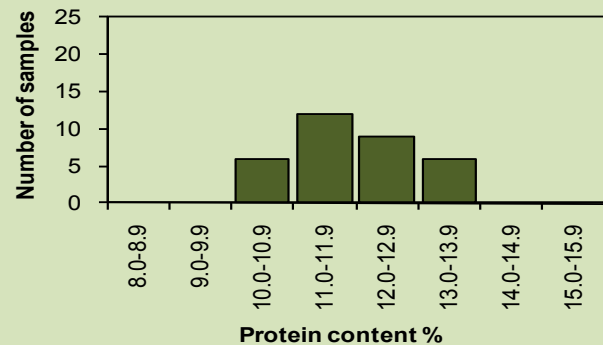
Protein distribution of wheat in summer rainfall area



Protein distribution of wheat in the irrigation areas



Protein distribution of wheat in other summer rainfall and irrigation areas

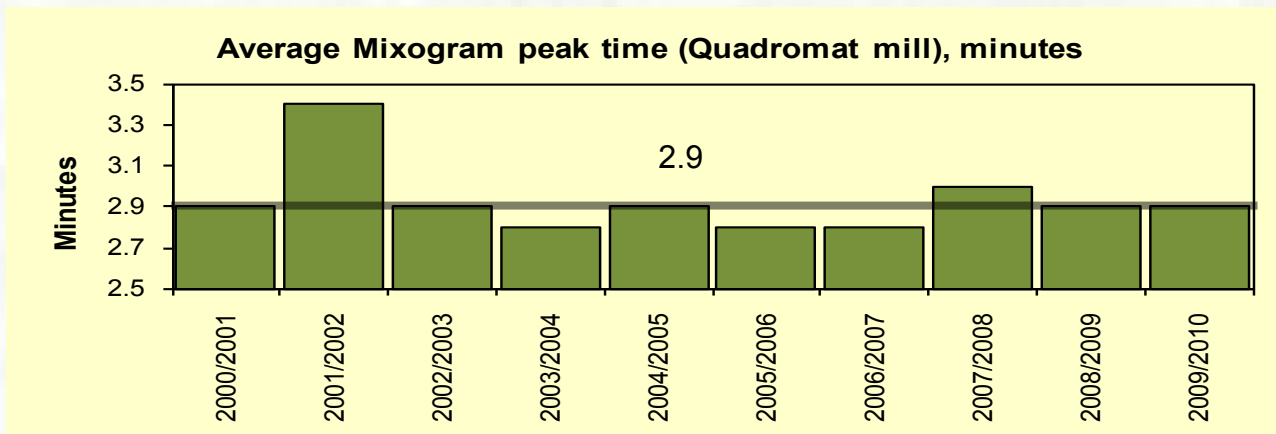
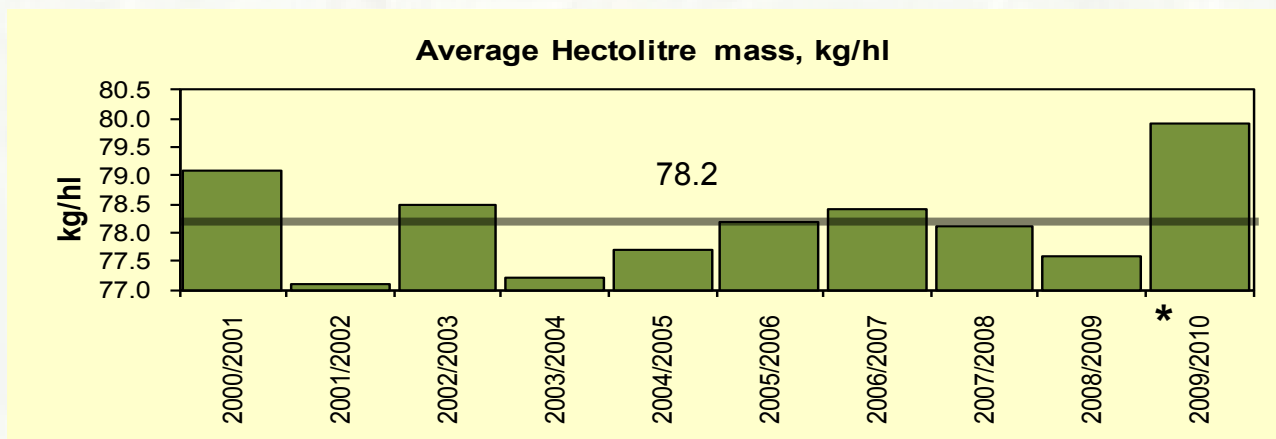
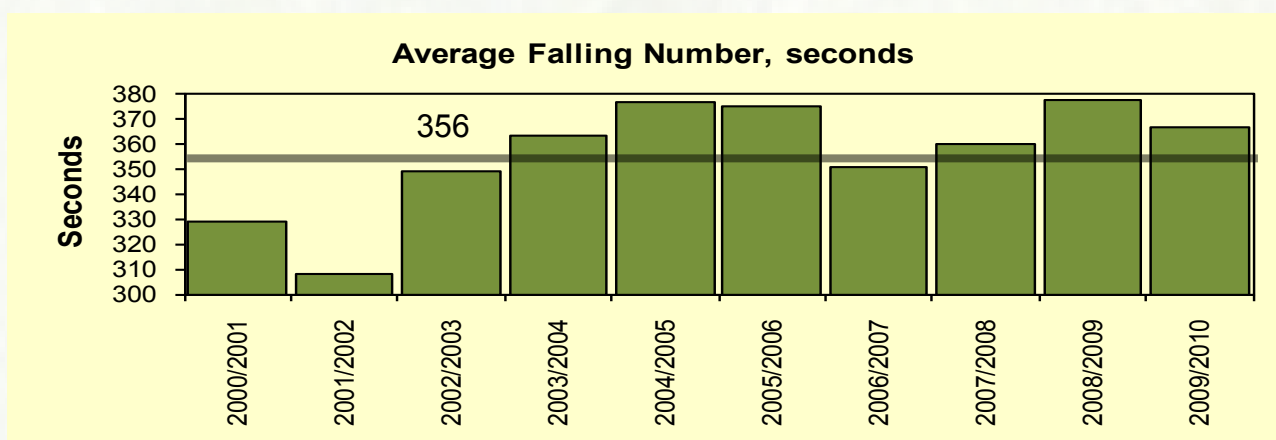
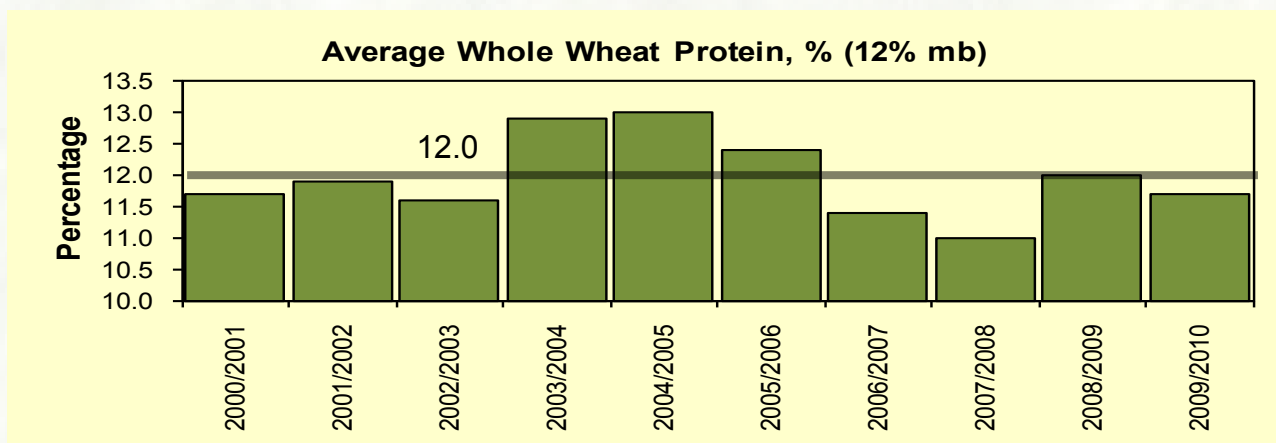


REGIONAL QUALITY WEIGHTED AVERAGES

	<i>Winter rainfall area (Western Cape)</i>			<i>Summer rainfall area (Free State)</i>			<i>Irrigation areas</i>			<i>Other Summer rainfall and Irrigation areas</i>			<i>RSA average</i>		
<i>Individual samples n</i>	174			155			118			33			480		
<i>Regions</i>	1 - 6			21 - 28			7, 10 - 12, 14 - 20, 36			32 - 35			All		
<i>Hectolitre mass dirty, kg/hl</i>	79.3			80.0			80.6			79.8			79.9		
<i>1000 kernel mass (13 % mb), g</i>	39.9			38.4			38.6			40.6			39.1		
<i>Falling number, sec</i>	353			354			404			370			367		
<i>Screenings (1,8 mm), %</i>	2.02			1.25			1.75			1.00			1.63		
<i>Protein (12 % mb), % (ww)</i>	11.11			11.93			12.18			11.83			11.67		
<i>Mixogram peak time, min (Quadromat)</i>	2.5			3.3			2.6			3.1			2.9		
<i>Individual samples per class and grade, n</i>	<i>26</i>	<i>41</i>	<i>39</i>	<i>70</i>	<i>50</i>	<i>21</i>	<i>51</i>	<i>37</i>	<i>14</i>	<i>12</i>	<i>10</i>	<i>5</i>	<i>159</i>	<i>138</i>	<i>79</i>
	<i>21</i>	<i>35</i>	<i>12</i>	<i>7</i>	<i>7</i>	<i>0</i>	<i>2</i>	<i>12</i>	<i>2</i>	<i>0</i>	<i>4</i>	<i>2</i>	<i>30</i>	<i>58</i>	<i>16</i>
<i>Composite samples per class and grade, n = 100</i>	<i>B1</i>	<i>B2</i>	<i>B3</i>	<i>B1</i>	<i>B2</i>	<i>B3</i>	<i>B1</i>	<i>B2</i>	<i>B3</i>	<i>B1</i>	<i>B2</i>	<i>B3</i>	<i>B1</i>	<i>B2</i>	<i>B3</i>
	<i>B4</i>	<i>UT</i>	<i>COW</i>	<i>B4</i>	<i>UT</i>	<i>COW</i>	<i>B4</i>	<i>UT</i>	<i>COW</i>	<i>B4</i>	<i>UT</i>	<i>COW</i>	<i>B4</i>	<i>UT</i>	<i>COW</i>
<i>Composite samples, n</i>	<i>5</i>	<i>6</i>	<i>6</i>	<i>10</i>	<i>10</i>	<i>5</i>	<i>8</i>	<i>8</i>	<i>7</i>	<i>3</i>	<i>4</i>	<i>2</i>	<i>26</i>	<i>28</i>	<i>20</i>
	<i>5</i>	<i>4</i>	<i>3</i>	<i>1</i>	<i>3</i>	<i>1</i>	<i>4</i>	<i>3</i>	<i>0</i>	<i>0</i>	<i>1</i>	<i>1</i>	<i>10</i>	<i>11</i>	<i>5</i>
<i>Bühler extraction, %</i>	74.4	73.8	74.6	75.2	76.2	75.8	74.2	74.1	73.7	75.8	76.1	76.5	74.8	75.1	74.8
	74.5	74.4	73.4	73.9	75.7	73.8	73.0	74.1	-	-	76.7	76.5	73.8	74.9	74.1
<i>Flour colour, KJ</i>	-2.2	-2.2	-2.2	-2.3	-2.4	-2.4	-2.2	-2.2	-2.2	-2.0	-2.2	-2.2	-2.2	-2.3	-2.3
	-2.3	-2.4	-1.8	-2.4	-1.9	-1.9	-2.1	-2.3	-	-	-1.9	-1.8	-2.2	-2.2	-1.7
<i>Farinogram:</i>	62.3	60.9	60.5	62.1	61.0	60.6	62.9	62.3	60.9	61.0	60.4	59.0	62.3	61.3	60.5
<i>Water absorption, %</i>	59.6	60.7	58.2	56.4	60.9	59.6	59.7	60.0	-	-	60.6	57.4	59.3	60.6	58.3
<i>Farinogram:</i>	4.1	3.5	2.8	4.8	3.7	3.4	5.0	2.9	2.7	5.6	3.6	3.0	4.8	3.4	2.9
<i>Development time, min</i>	2.1	3.1	2.3	1.8	5.2	4.7	1.9	3.2	-	-	3.0	1.9	2.0	3.7	2.7
<i>Alveogram:</i>	37.4	33.9	29.2	40.1	33.0	31.8	48.1	43.4	37.4	43.3	35.6	29.1	42.4	36.5	32.7
<i>Strength (S), cm²</i>	25.3	28.9	24.8	22.0	44.0	31.8	25.3	35.2	-	-	35.6	27.8	25.0	35.3	26.8
<i>Alveogram:</i>	1.00	1.02	1.21	0.84	0.84	1.09	1.37	1.76	1.70	0.85	0.75	0.84	1.04	1.13	1.31
<i>P/L</i>	1.44	1.15	0.57	0.55	0.75	0.73	2.56	1.07	-	-	0.66	0.62	1.80	0.97	0.61
<i>Extensogram:</i>	75	70	59	92	83	73	107	98	88	112	89	73	96	85	74
<i>Strength, cm²</i>	57	62	60	56	121	91	68	82	-	-	104	85	61	87	71
<i>Mixogram peak time, min</i>	2.3	2.4	2.4	2.4	2.4	2.5	2.8	3.0	3.1	2.9	2.7	2.5	2.6	2.6	2.7
	2.6	2.3	2.6	2.5	2.7	2.7	3.1	2.6	-	-	2.7	3.3	2.8	2.5	2.8
<i>Relationship between protein and bread volume</i>	VG	EX	EX	EX	EX	VG	VG	VG	EX	VG	EX	EX	VG	EX	EX
	EX	EX	EX	EX	VG	VG	VG	EX	-	-	EX	EX	EX	EX	EX

EX = Excellent VG = Very Good

WEIGHTED AVERAGE QUALITY OVER 10 SEASONS



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

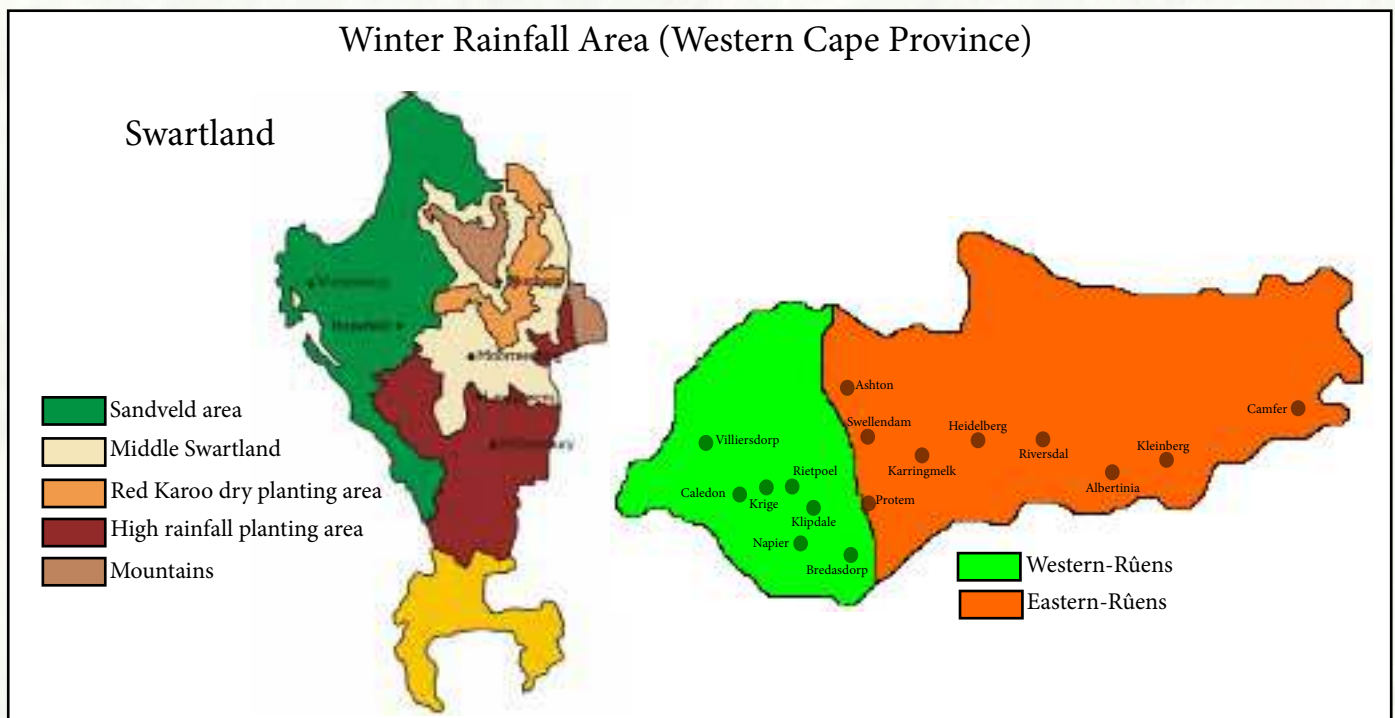
REGIONAL QUALITY

WINTER RAINFALL AREA (Western Cape)

Production regions 1 to 6 fall within the winter rainfall area (Western Cape Province). Region 1 is Namaqualand, regions 2 - 4 are the Swartland area and regions 5 and 6 the Rûens area. The Western Cape had the highest production of all the provinces this season, namely 675 000 tons (35 %) (CEC).

The hectolitre mass averaged 79.3 kg/hl. The thousand kernel mass averaged 39.9 gram, which is lower than the previous season's 42.1 gram. The average falling number was 353 seconds. The average protein content of 11.11 % (12 % mb) was the lowest of the different production areas.

Conditions for crop production were generally favourable in the winter rainfall area. Parts of the Swartland however experienced heavy rainfall during harvesting which resulted in pre-harvest sprouting and therefore low falling numbers.



The screenings of 2.02 % was higher than the previous season's 1.72 %. The Bühler extraction averaged 74.2 % (average of wheat grades B1 to B4, UT and COW) and the average colour of the flour was -2.2 KJ units. This colour indicates a very white flour that is preferred by millers and bakers.

The mixogram peak time (Quadromat mill) averaged 2.5 minutes. The average farinogram absorption was 60.5 %. The average alveogram strength was 30.4 cm² and the average strength on the extensogram was 64 cm². The alveogram strength in the Free State was 35.9 cm² and in the irrigation areas 40.0 cm².

The 100-gram baking test showed an excellent relationship between protein content and bread volume.

SUMMER RAINFALL AREA

(Free State)

Production regions 21 to 28, which fall within the Free State Province, had the second highest production, namely 622 750 tons (32 %) (CEC).

The 2.7 tons/ha average yield in the Free State was higher than the 2.0 tons/ha of the previous season.

Planting conditions were good due to good rainfall, in the late summer. Climatic conditions were favourable during harvesting.

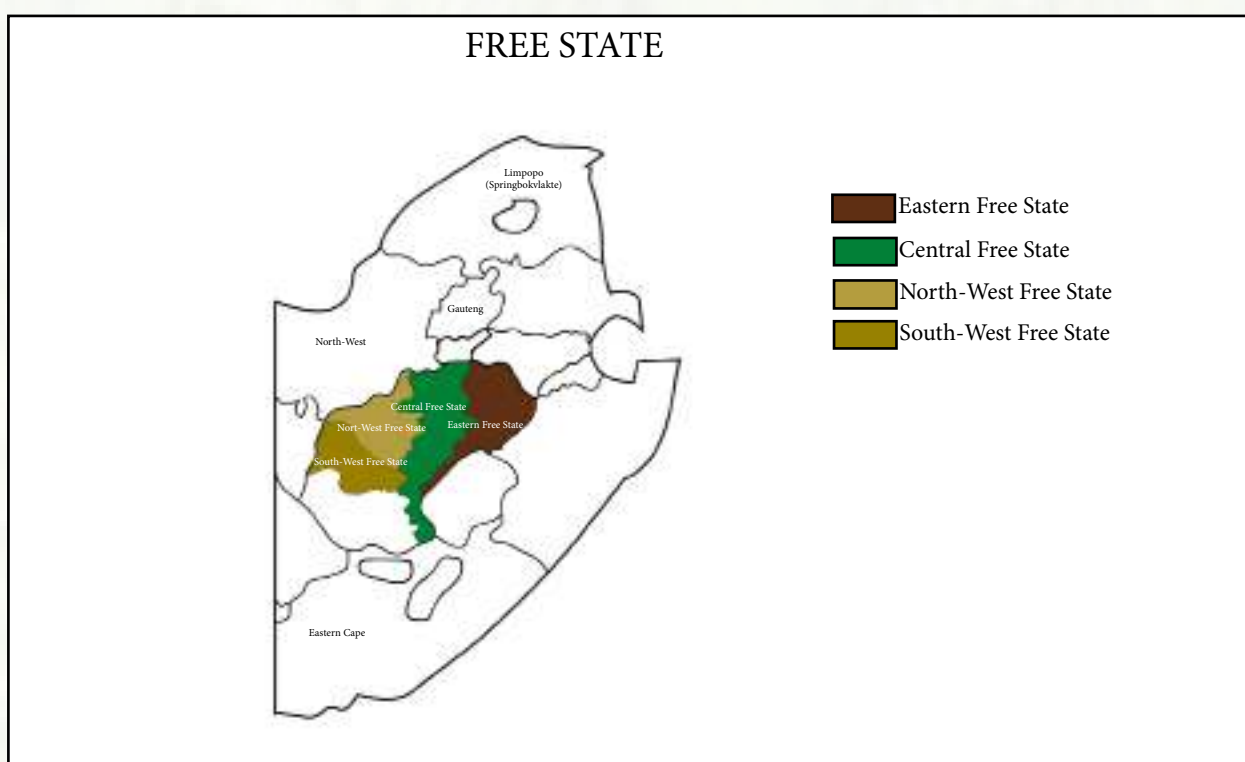
The average hectolitre mass was 80.0 kg/hl. The physical characteristic thousand kernel mass (38.4 g) was higher than the previous season's 34.5 g. The average screenings was 1.25 %. The average protein content decreased from 13.40 % the previous season to 11.93 % (12 % mb) this season. Although the average falling number was 354 seconds, seven samples gave falling numbers lower than 250 seconds and three samples were below 220 seconds.

The mixogram (Quadromat) peak time of 3.3 minutes was the same as the previous season, giving the Free State the longest average mixogram peak time of the different production areas.

The average Bühler extraction percentage in the Free State was 75.6 % (75.0 % previous season). The Kent Jones flour colour was -2.3 KJ units (-1.1 KJ units in previous season).

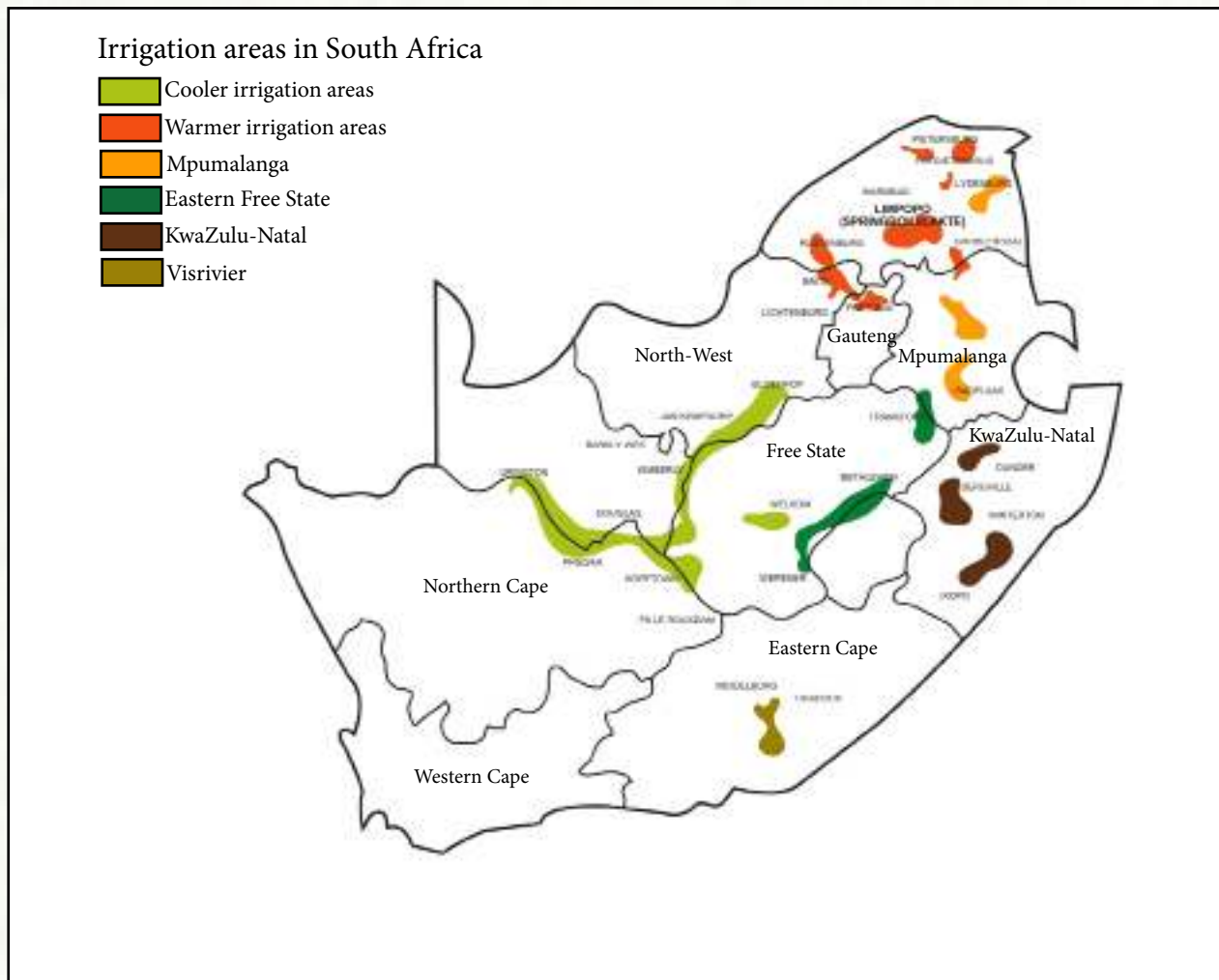
The average farinogram water absorption was 61.1 %, a little lower than the previous season but more or less the same as the other regions. An average alveogram strength of 35.9 cm² and an extensogram strength of 88 cm² were reported.

The 100-gram baking test showed that the relationship between protein content and bread volume ranged from excellent to very good between the different grades.



IRRIGATION AREAS

(Northern Cape, North West (plus other irrigation areas))



Production regions 7, 10 - 12, 14 - 20 and 36 falls within the irrigation areas. These areas produced 469 000 tons of wheat this season (24 % of total production) with an average yield of 5.3 tons/hectare.

The average hectolitre mass was 80.6 kg/hl and the thousand kernel mass was 38.6 g (37.0 g the previous season). The average falling number was 404 seconds. The average screenings was 1.75 % and the protein averaged 12.18 % (12 % mb).

The average mixogram (Quadromat) peak time was 2.6 minutes which was more or less the same as the previous season.

The average Bühler extraction percentage was 73.9 (76.5 % during the previous season), with an average flour colour of -2.2 KJ units.

The average farinogram water absorption was 61.6 % (60.0 % during previous season), with an average farinogram development time of 3.3 minutes.

The average alveogram strength was 40.0 cm² and the average P/L 1.68 (36.8 cm² and 0.57 respectively the previous season).

The average extensogram strength was 92 cm². The relationship between protein content and bread volume (with the 100-gram baking test) was shown to be very good.

OTHER SUMMER RAINFALL AND IRRIGATION AREAS

(Mpumalanga, Limpopo and Gauteng)

Other summer rainfall regions, excluding the Free State, are mainly regions 30, 32, 33 (Mpumalanga), 34 (Gauteng) and 35 (Limpopo). They produced in total 153 050 tons during this season (8 % of the total production).

The average hectolitre mass was 79.8 kg/hl and the average thousand kernel mass was 40.6 g (39.5 g the previous season).

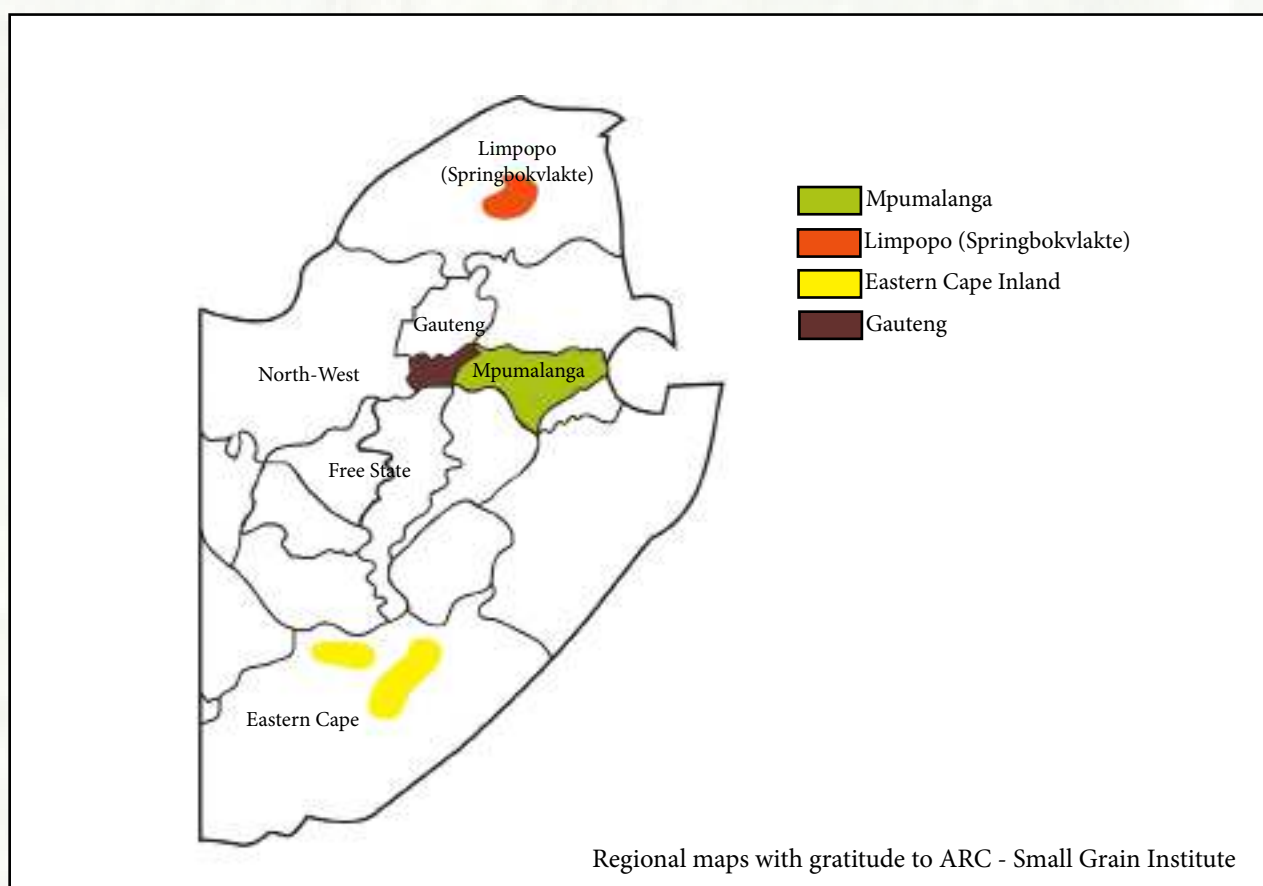
The average falling number was 370 seconds, with the average percentage screenings 1.00 %. The average protein content was 11.83 % (12 % mb), which is similar to the previous year.

The average mixogram (Quadromat) peak time was 3.1 minutes (3.0 minutes the previous season).

The average Bühler extraction was 76.2 %, with an average colour of -2.1 KJ units (76.2 % and -1.5 KJ units the previous season). The farinogram average water absorption was 60.1 % (60.8 % the previous season) and had an average development time of 3.8 minutes.

The average alveogram strength was 35.8 cm², with an average P/L value of 0.77, and the average extensogram strength was 93 cm².

The 100-gram baking test showed an excellent relationship between protein content and bread volume.



South African Winter Cereal Production

Wheat is by far the biggest winter cereal crop planted in South Africa. Other winter crops are barley for malting purposes and canola. Summer field crops are better suited for the South African climatic conditions. Maize has the largest crop size of the different crops, followed by wheat, then soya-beans, sunflower seed, sorghum, barley, groundnuts, dry beans and canola.

South Africa (made up of nine provinces) is divided into 36 crop production regions with wheat planted in about 32 of these regions. These production regions are described on pages 16 to 44 (in the header of the left page) giving the specific intake silo names for each region.

The three main wheat producing provinces are Western Cape (winter rainfall), Free State (summer rainfall) and the Northern Cape (irrigation). A fourth province worth mentioning is the North-West (mainly irrigation).

The Western Cape province produced 675 000 tons and the Free State province followed with 622 750 tons. (Seventh estimate by the Crop Estimates Committee, CEC). These two provinces were responsible for 67 % of the total wheat produced.

The yield in the main production areas ranged from 6.3 tons per hectare in the Northern Cape (irrigation area), 2.7 tons per hectare in the Free State and 2.3 tons per hectare for the Western Cape. Gauteng gave a yield of 6.4 tons per hectare, followed by North West with 5.7 tons per hectare and Limpopo and Mpumalanga both with 5.5 tons per hectare. KwaZulu-Natal and the Eastern Cape yielded 5.0 and 4.0 tons per hectare respectively. See graph on page 13.

The local production is not sufficient for domestic requirements and South Africa has to import wheat to meet its domestic consumption of approximately 2.9 million tons every year.

South Africa has three major wheat-breeding programs. The South African breeders can only release a new cultivar or an introduction cultivar if it has better agronomical as well as better flour quality characteristics than the cultivars planted commercially in a specific area. 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.

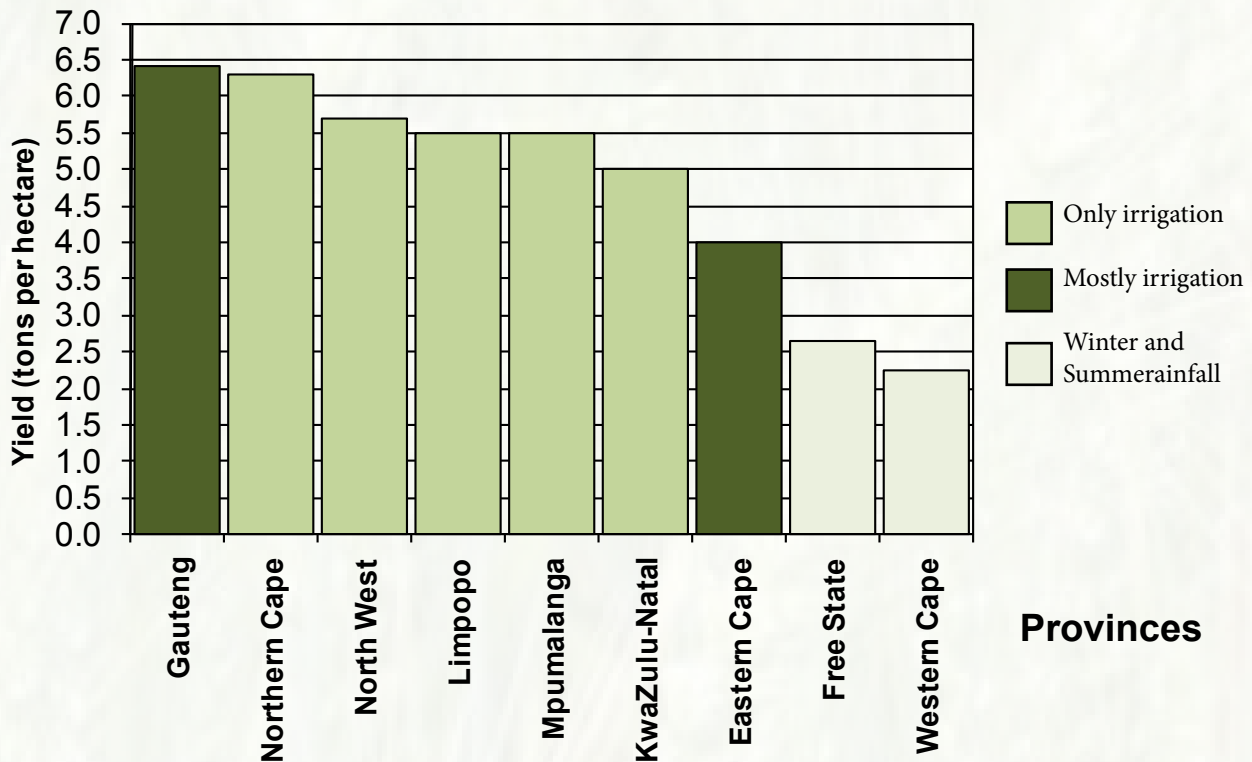
Imported wheat (1 October 2008 - 30 September 2009) (Previous season)

The quality of all wheat imported into South Africa is also monitored by the SAGL. The range of analyses done on the local crop for the purpose of this survey are also done on the imported wheat. These results may only be made available at the end of each season.

Pages 56 to 67 of this report contain summaries of wheat imported from specific countries during the 2008/2009 season. This imported wheat quality is compared to a summary of the local crop quality for the same season.

The quality of the Australian and Canadian flour milled from wheat imported during the 2008/2009 season were better than the local wheat flour quality. The Argentinian and German flour were not as good as the quality of the local flour of the 2008/2009 season, while the Brazilian and American flour were noticeably weaker than the local flour.

**Average yield per province
(Irrigation versus summer and winter rainfall areas)**

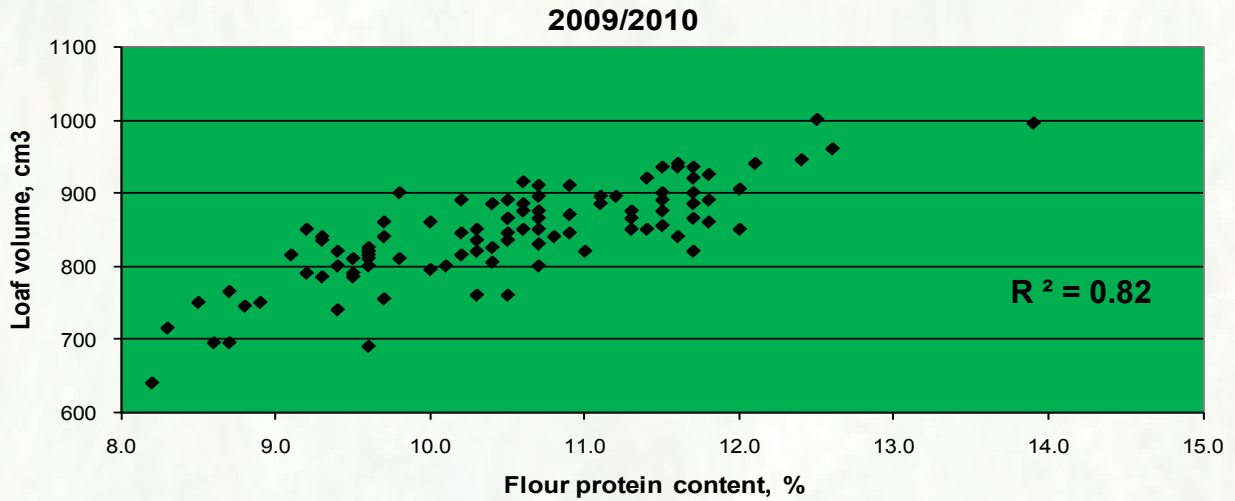


(Based on figures obtained from CEC)

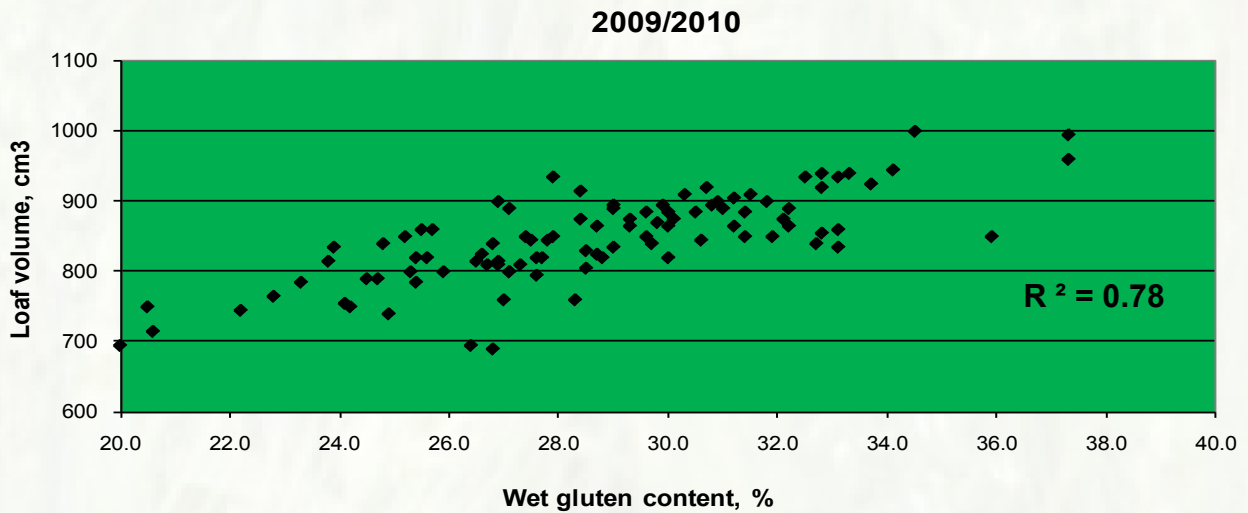
**Average quality data of imported wheat during
the 2008/2009 season (previous season)**

	Argentina	Australia	Brazil	Canada	Germany	USA	RSA
Protein, % (12 % mb)	11.74	12.17	12.54	14.20	10.95	10.64	12.00
Hlm, kg/hl	78.8	83.9	77.6	79.0	81.2	78.2	77.6
Screenings, %	3.03	0.77	4.44	3.87	1.64	1.94	1.72
Number of samples	59	5	4	10	24	9	480
Extraction, %	73.9	74.5	70.2	74.6	75.5	73.1	75.7
Flour colour, KJ	-1.2	-2.6	0.4	-1.8	-1.3	-1.3	-1.5
Farinogram							
Water absorption, %	60.5	61.9	63.2	62.3	60.5	55.2	61.1
Development time, %	2.3	3.9	2.3	5.5	1.8	1.7	4.0
Alveogram							
Strength, cm²	39.4	49.5	30.5	51.2	32.4	26.1	38.0
P/L	2.11	1.26	2.09	1.01	2.09	1.09	0.90
Extensogram							
Strength, cm²	92	124	59	119	81	74	90
Mixogram (Bühler)							
Peak time, min	4.0	2.8	2.8	3.2	3.4	4.0	2.6
100 g Baking test							
Volume, cm³	764	833	785	956	715	729	902
Evaluation	3	2	3	2	3	1	0
Number of samples	59	5	4	10	24	9	100

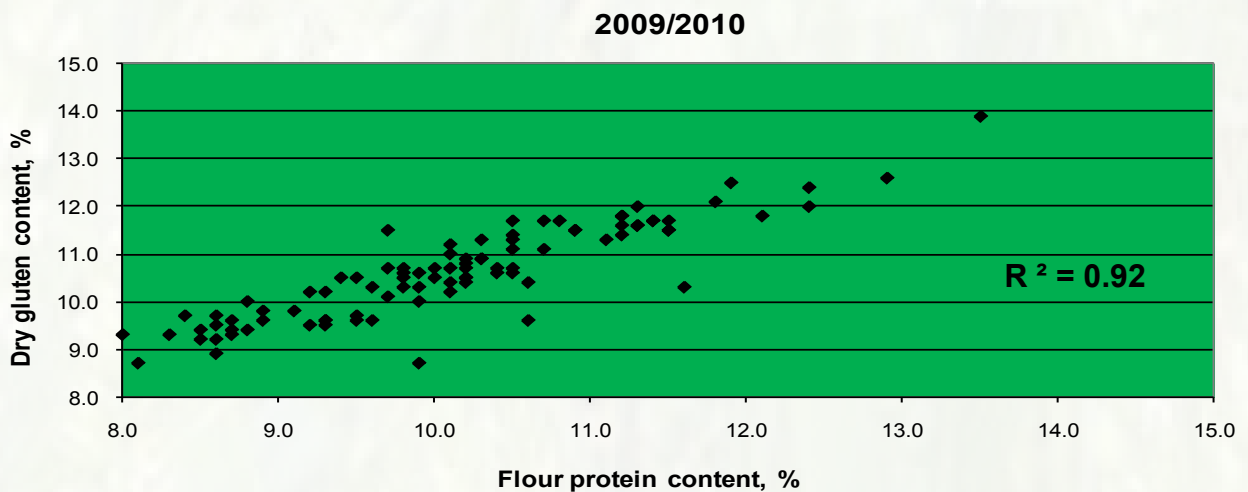
Comparison of protein content vs loaf volume



Comparison of wet gluten content vs loaf volume



Comparison of protein content vs dry gluten content



Comparison of Flour Quality over the last four seasons

Flour Quality 2009/2010 season			
Flour protein (12 % mb)	10.5	Farinogram water abs. (%)	61.0
Bread volume 100g (cm ³)	843	Farinogram dev. time (min.)	3.5
Mixogram (Bühler) peak time (min)	2.6	Alveogram strength (cm ²)	35.5
Extensogram strength (cm ²)	83	Alveogram P/L	1.17

Flour Quality 2008/2009 season			
Flour protein (12 % mb)	11.1	Farinogram water abs. (%)	61.1
Bread volume 100g (cm ³)	902	Farinogram dev. time (min.)	4.0
Mixogram (Bühler) peak time (min)	2.6	Alveogram strength (cm ²)	38.0
Extensogram strength (cm ²)	90	Alveogram P/L	0.90

Flour Quality 2007/2008 season			
Flour protein (12 % mb)	10.8	Farinogram water abs. (%)	60.8
Bread volume 100g (cm ³)	827	Farinogram dev. time (min.)	3.6
Mixogram (Bühler) peak time (min)	2.8	Alveogram strength (cm ²)	41.9
Extensogram strength (cm ²)	97	Alveogram P/L	0.94

Flour Quality 2006/2007 season			
Flour protein (12 % mb)	10.6	Farinogram water abs. (%)	61.4
Bread volume 100g (cm ³)	816	Farinogram dev. time (min.)	3.4
Mixogram (Bühler) peak time (min)	2.6	Alveogram strength (cm ²)	36.8
Extensogram strength (cm ²)	82	Alveogram P/L	0.93

**SOUTH AFRICAN
WINTER RAINFALL WHEAT
Western Cape Province**

PRODUCTION REGION	(1) Namaqualand					(2) Swartland Western Region						
	Intake silos											
	Bitterfontein Graafwater Landplaas Vanrhynsdorp Vredendal					Bergrivier Darling Koperfontein Vredenburg						
WHEAT												
	ave	min	max	stdev		ave	min	max	stdev			
Protein (12% mb), %	11.2	10.0	12.9	1.27		11.4	9.8	12.8	0.82			
Falling number, sec	299	234	347	51.02		314	110	435	78.35			
1000 Kernel mass (13% mb), g	38.5	36.4	41.2	2.13		36.4	32.0	40.3	1.96			
Hectolitre mass (dirty), kg/hl	78.7	78.5	78.8	0.14		77.8	67.8	80.8	2.46			
Screenings (<1.8mm), %	1.91	1.48	2.28	0.33		2.49	1.12	10.15	1.63			
Total damaged kernels, %	1.76	1.38	2.30	0.40		0.76	0.24	2.40	0.53			
Number of samples	4					30						
CULTIVARS												
		SST 027	38.8			SST 027	40.2					
cultivars		SST 015	32.8			SST 88	27.6					
with highest %		SST 835	8.8			SST 015	18.8					
occurrence		SST 88	8.0			SST 047	6.3					
		SST 047	5.0			SST 57	6.0					
Number of samples	4					30						
MIXOGRAM (Quadromat)												
	ave	min	max	stdev		ave	min	max	stdev			
Peak time, min	2.9	2.7	3.2	0.22		2.6	2.3	3.1	0.22			
Tail height (6min), mm	46	42	50	3.42		45	39	50	2.31			
Number of samples	4					30						
	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
BÜHLER EXTRACTION, %	-	73.3	74.6	-	-	-	74.0	74.3	74.4	73.8	73.9	72.2
FLOUR												
Protein (12% mb), %	-	10.4	9.2	-	-	-	11.1	10.5	9.6	9.3	10.6	11.3
Colour, KJ	-	-2.0	-2.0	-	-	-	-2.2	-1.8	-2.2	-1.7	-2.1	-0.7
GLUTEN												
Wet gluten (14% mb), %	-	28.7	24.7	-	-	-	29.0	28.7	25.4	24.8	29.6	32.2
Dry gluten (14% mb), %	-	10.6	8.5	-	-	-	10.5	10.2	8.7	8.7	10.5	11.1
FARINOGRAM												
Water absorption (14% mb), %	-	60.6	59.1	-	-	-	61.6	60.2	59.7	57.4	61.2	60.9
Development time, min	-	3.8	1.7	-	-	-	4.5	3.0	2.8	2.2	3.3	3.2
Stability, min	-	6.8	4.1	-	-	-	6.7	5.3	5.6	4.0	5.3	4.3
Mixing tolerance index, BU	-	44	61	-	-	-	41	53	51	73	48	72
EXTENSOGRAM (45 min pull)												
Area, cm ²	-	79	69	-	-	-	64	64	53	60	60	60
Maximum height, BU	-	345	285	-	-	-	270	275	275	270	265	245
Extensibility, mm	-	180	173	-	-	-	161	164	131	154	157	175
ALVEOGRAM												
Strength (S), cm ²	-	36.1	28.4	-	-	-	32.1	33.0	30.4	24.6	29.8	28.9
Stability (P), mm	-	88	76	-	-	-	83	80	84	68	84	72
Distensibility (L), mm	-	88	76	-	-	-	87	92	75	76	75	92
Configuration ratio (P/L)	-	1.00	0.99	-	-	-	0.95	0.87	1.13	0.89	1.12	0.79
MIXOGRAM												
Peak time, min	-	2.3	2.8	-	-	-	2.1	2.3	2.5	2.8	2.3	2.5
100g BAKING TEST												
Loaf volume, cm ³	-	825	790	-	-	-	895	865	820	840	850	865
Evaluation	-	0	0	-	-	-	0	0	0	0	0	1

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

1

2

FARINOGRAM

1

2

EXTENSOGRAM

1

2

ALVEOGRAM

1

2

**SOUTH AFRICAN
WINTER RAINFALL WHEAT
Western Cape Province**

PRODUCTION REGION	(3) Swartland Central Region				(4) Swartland Eastern Region							
	Intake silos				Ceres Gouda Halfmanshof Leliedam Porterville Riebeeck-Wes							
WHEAT	ave	min	max	stdev	ave	min	max	stdev				
Protein (12% mb), %	10.9	9.0	13.1	1.04	10.6	8.8	12.4	0.97				
Falling number, sec	351	58	518	102.91	382	125	598	102.05				
1000 Kernel mass (13% mb), g	39.2	34.0	45.8	2.97	38.2	31.1	41.2	2.28				
Hectolitre mass (dirty), kg/hl	79.5	72.2	82.6	2.57	80.1	72.2	83.4	2.39				
Screenings (<1.8mm), %	2.02	0.14	5.05	1.25	2.50	0.81	5.15	1.07				
Total damaged kernels, %	1.06	0.04	12.86	2.06	0.71	0.06	5.08	1.23				
Number of samples	63				23							
CULTIVARS	SST 015 36.4				SST 027 35.7							
cultivars	SST 027 30.7				SST 015 28.5							
with highest %	SST 88 20.7				SST 88 20.9							
occurrence	SST 047 6.5				SST 57 7.9							
	SST 57 4.8				SST 047 6.7							
Number of samples	63				23							
MIXOGRAM (Quadromat)	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	2.5	1.7	3.3	0.34	2.5	2.2	3.0	0.23				
Tail height (6min), mm	45	39	53	3.34	45	40	51	2.91				
Number of samples	63				23							
BÜHLER EXTRACTION, %	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	73.7	73.6	74.3	74.2	74.2	74.4	75.1	73.8	74.3	74.1	73.9	73.6
FLOUR												
Protein (12% mb), %	11.4	10.7	9.6	8.7	9.6	9.8	11.6	10.4	9.6	8.9	9.6	9.3
Colour, KJ	-2.5	-2.6	-2.5	-2.6	-2.4	-1.9	-2.3	-2.6	-2.5	-2.7	-2.5	-2.3
GLUTEN												
Wet gluten (14% mb), %	31.9	30.0	26.5	22.8	27.3	26.9	32.7	28.5	26.6	24.2	25.9	23.9
Dry gluten (14% mb), %	11.2	10.4	9.3	8.1	9.5	9.1	11.3	10.1	9.6	8.6	8.9	8.0
FARINOGRAM												
Water absorption (14% mb), %	62.4	61.9	61.2	60.8	60.7	57.1	63.5	61.3	61.1	60.8	61.2	56.5
Development time, min	4.2	3.0	3.0	2.0	3.2	2.0	4.3	3.5	3.0	2.0	2.4	1.8
Stability, min	8.0	6.1	5.5	4.7	5.0	3.3	8.2	7.3	5.0	4.8	5.6	3.4
Mixing tolerance index, BU	33	44	48	55	52	101	32	37	56	59	46	102
EXTENSOGRAM (45 min pull)												
Area, cm2	73	70	56	55	54	61	89	77	57	56	62	60
Maximum height, BU	310	305	255	270	255	260	330	335	250	285	290	270
Extensibility, mm	165	162	147	142	149	167	182	160	162	134	149	161
ALVEOGRAM												
Strength (S), cm2	38.8	34.7	30.1	26.1	28.9	23.5	38.8	35.0	28.4	25.5	29.8	22.0
Stability (P), mm	94	91	91	92	83	50	99	94	83	94	91	49
Distensibility (L), mm	87	82	68	55	74	115	81	76	73	50	66	103
Configuration ratio (P/L)	1.08	1.11	1.34	1.66	1.11	0.44	1.21	1.24	1.14	1.88	1.39	0.48
MIXOGRAM												
Peak time, min	2.5	2.5	2.5	2.6	2.5	2.5	2.3	2.5	2.3	2.8	2.3	2.8
100g BAKING TEST												
Loaf volume, cm3	850	865	815	765	810	900	840	805	825	750	800	835
Evaluation	1	0	0	0	0	0	2	1	0	0	0	0

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

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FARINOGRAM

3

4

EXTENSOGRAM

4

ALVEOGRAM

4

**SOUTH AFRICAN
WINTER RAINFALL WHEAT
Western Cape Province**

PRODUCTION REGION	(5) Rüens Western Region				(6) Rüens Eastern Region							
	Intake silos											
	Bredasdorp Caledon Klipdale Krige Napier Protem Rietpoel Villiersdorp				Albertinia Ashton Camfer Heidelberg Karringmelksrivier Kleinberg Protem Riversdal Swellendam							
WHEAT												
	ave	min	max	stdev	ave	min	max	stdev				
Protein (12% mb), %	11.1	9.6	13.1	0.98	11.8	9.5	13.6	0.98				
Falling number, sec	379	237	455	48.61	355	271	427	42.84				
1000 Kernel mass (13% mb), g	44.7	41.3	47.5	1.77	41.8	36.8	45.6	2.37				
Hectolitre mass (dirty), kg/hl	80.0	78.6	81.8	0.83	79.3	76.3	81.4	1.19				
Screenings (<1.8mm), %	1.30	0.11	4.10	0.79	1.86	0.67	5.47	0.95				
Total damaged kernels, %	0.39	0.00	1.00	0.25	0.82	0.08	6.46	1.26				
Number of samples	30				24							
CULTIVARS												
		SST 027	33.8			SST 027	34.7					
cultivars		SST 015	31.7			SST 88	26.8					
with highest %		SST 88	21.5			SST 015	24.1					
occurrence		SST 047	7.5			SST 047	8.3					
		PAN 3408	1.5			SST 57	4.2					
Number of samples	30				24							
MIXOGRAM (Quadromat)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	2.5	2.2	2.9	0.20	2.4	2.0	2.9	0.27				
Tail height (6min), mm	47	43	53	2.47	47	43	51	1.97				
Number of samples	30				24							
BÜHLER EXTRACTION, %	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	74.7	73.2	75.0	74.9	75.6	-	74.5	74.6	74.8	75.3	-	-
FLOUR												
Protein (12% mb), %	11.8	10.5	9.5	8.8	10.3	-	11.5	10.5	9.6	8.6	-	-
Colour, KJ	-2.3	-2.4	-2.2	-2.5	-2.4	-	-1.8	-1.9	-1.9	-2.2	-	-
GLUTEN												
Wet gluten (14% mb), %	31.0	27.5	25.4	22.2	27.7	-	32.8	29.0	28.8	20.0	-	-
Dry gluten (14% mb), %	11.2	9.4	9.3	7.7	9.9	-	11.5	10.0	10.6	7.1	-	-
FARINOGRAM												
Water absorption (14% mb), %	61.7	59.6	60.1	59.2	59.8	-	62.4	62.0	61.5	60.0	-	-
Development time, min	3.7	4.0	3.2	2.2	3.5	-	3.8	3.5	3.0	2.0	-	-
Stability, min	7.0	5.8	5.1	4.5	5.6	-	6.8	5.7	4.9	4.1	-	-
Mixing tolerance index, BU	37	54	59	60	48	-	45	49	52	62	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	90	73	65	54	70	-	62	54	55	61	-	-
Maximum height, BU	310	290	285	265	295	-	255	235	270	295	-	-
Extensibility, mm	195	171	152	138	159	-	166	157	137	138	-	-
ALVEOGRAM												
Strength (S), cm ²	38.7	29.8	29.4	25.8	27.2	-	38.8	34.7	28.4	24.5	-	-
Stability (P), mm	85	73	86	78	76	-	90	91	91	88	-	-
Distensibility (L), mm	102	92	70	69	79	-	98	84	63	53	-	-
Configuration ratio (P/L)	0.83	0.80	1.22	1.13	0.96	-	0.92	1.09	1.44	1.66		
MIXOGRAM												
Peak time, min	2.3	2.4	2.4	2.4	2.2	-	2.2	2.2	2.1	2.2	-	-
100g BAKING TEST												
Loaf volume, cm ³	890	845	785	745	820	-	855	835	820	695	-	-
Evaluation	1	0	0	0	0	-	1	0	0	1	-	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

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6

FARINOGRAM

6

EXTENSOGRAM

6

ALVEOGRAM

6

SOUTH AFRICAN IRRIGATION WHEAT Eastern Cape

PRODUCTION REGION	(7) Eastern Cape Southern Region						(10) Griqualand-West					
Intake silos	Avontuur Humansdorp Paterson Uitenhage						Britstown Douglas Havenga Brug Marydale Modderrivier Oranjerivierstasie Prieska Rietrivier Upington					
WHEAT												
	ave	min	max	stdev			ave	min	max	stdev		
Protein (12% mb), %	12.2	11.7	12.6	0.64			12.1	10.5	13.4	0.78		
Falling number, sec	375	352	397	31.82			421	333	529	39.49		
1000 Kernel mass (13% mb), g	38.3	37.7	38.9	0.85			41.8	34.7	51.3	3.19		
Hectolitre mass (dirty), kg/hl	79.5	78.3	80.7	1.70			82.6	71.2	86.0	3.11		
Screenings (<1.8mm), %	1.51	1.43	1.59	0.11			0.89	0.21	7.49	1.41		
Total damaged kernels, %	0.27	0.26	0.28	0.01			0.39	0.00	4.20	0.78		
Number of samples	2						27					
CULTIVARS												
	SST 835 72.0						SSST 835 46.8					
cultivars	CRN 826 15.5						Duzi 19.9					
with highest %	Olifants 7.5						PAN 3434 6.5					
occurrence	Baviaans 5.0						SST 806 5.8					
							Baviaans 5.3					
Number of samples	2						27					
MIXOGRAM (Quadromat)												
	ave	min	max	stdev			ave	min	max	stdev		
Peak time, min	2.7	2.5	2.8	0.21			2.2	1.8	2.8	0.29		
Tail height (6min), mm	50	48	52	2.83			45	39	50	2.32		
Number of samples	2						27					
BÜHLER EXTRACTION, %	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	-	-	-	-	-	-	75.9	76.5	-	-	-	73.8
FLOUR												
Protein (12% mb), %	-	-	-	-	-	-	11.6	10.4	-	-	-	11.3
Colour, KJ	-	-	-	-	-	-	-2.7	-2.9	-	-	-	-1.9
GLUTEN												
Wet gluten (14% mb), %	-	-	-	-	-	-	33.1	29.6	-	-	-	31.4
Dry gluten (14% mb), %	-	-	-	-	-	-	11.2	10.2	-	-	-	10.5
FARINOGRAM												
Water absorption (14% mb), %	-	-	-	-	-	-	62.1	62.2	-	-	-	59.6
Development time, min	-	-	-	-	-	-	5.0	3.8	-	-	-	4.7
Stability, min	-	-	-	-	-	-	6.0	5.7	-	-	-	6.6
Mixing tolerance index, BU	-	-	-	-	-	-	50	51	-	-	-	47
EXTENSOGRAM (45 min pull)												
Area, cm2	-	-	-	-	-	-	79	69	-	-	-	91
Maximum height, BU	-	-	-	-	-	-	290	285	-	-	-	350
Extensibility, mm	-	-	-	-	-	-	187	170	-	-	-	179
ALVEOGRAM												
Strength (S), cm2	-	-	-	-	-	-	33.9	32.1	-	-	-	31.8
Stability (P), mm	-	-	-	-	-	-	74	81	-	-	-	72
Distensibility (L), mm	-	-	-	-	-	-	110	89	-	-	-	98
Configuration ratio (P/L)	-	-	-	-	-	-	0.67	0.92	-	-	-	0.73
MIXOGRAM												
Peak time, min	-	-	-	-	-	-	2.2	2.2	-	-	-	2.7
100g BAKING TEST												
Loaf volume, cm3	-	-	-	-	-	-	935	88	-	-	-	850
Evaluation	-	-	-	-	-	-	0	0	-	-	-	1

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

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FARINOGRAM

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EXTENSOGRAM

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ALVEOGRAM

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**SOUTH AFRICAN
IRRIGATION WHEAT
Vaal and Orange river area**

**MAINLY IRRIGATION WHEAT
North-West Province**

PRODUCTION REGION	(11) Vaalharts					(12) North-West Western Region						
Intake silos	Barkly-West Hartswater Jan Kemp Magogong Taung					Bloubank		Vryburg Vryhof				
						Buhmannsdrif						
						Kameel						
						Kraaipan						
						Madibogo						
						Mafikeng						
						Mareetsane						
						Piet Plessis						
						Springbokpan						
						Vergeleë						
WHEAT												
	ave	min	max	stdev		ave	min	max	stdev			
Protein (12% mb), %	12.5	10.7	13.9	0.81		13.1	11.1	15.2	1.70			
Falling number, sec	454	381	628	61.08		414	334	544	69.13			
1000 Kernel mass (13% mb), g	37.1	33.3	44.2	2.41		35.9	29.2	40.5	4.75			
Hectolitre mass (dirty), kg/hl	80.6	75.8	82.7	1.54		79.2	75.8	82.4	2.41			
Screenings (<1.8mm), %	2.90	0.67	10.58	2.02		2.27	0.78	4.32	1.43			
Total damaged kernels, %	0.52	0.06	2.20	0.44		0.64	0.18	2.86	0.99			
Number of samples	26					7						
CULTIVARS												
		CRN 826	38.2			SST 835	61.4					
cultivars		SST 835	30.8			CRN 826	13.6					
with highest %		Duzi	10.3			PAN 3349	11.4					
occurrence		SST 843	8.5			Duzi	6.3					
		Kariega	3.9			SST 806	2.4					
Number of samples	26					7						
MIXOGRAM (Quadromat)												
	ave	min	max	stdev		ave	min	max	stdev			
Peak time, min	2.8	2.0	4.3	0.51		2.6	1.8	3.7	0.68			
Tail height (6min), mm	49	46	58	2.85		49	43	55	4.50			
Number of samples	26					7						
BÜHLER EXTRACTION, %												
	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	76.2	76.7	76.1	-	75.4	-	76.6	77.0	-	-	73.6	-
FLOUR												
Protein (12% mb), %	11.8	10.7	9.5	-	10.6	-	11.6	10.6	-	-	13.9	-
Colour, KJ	-2.5	-2.4	-2.7	-	-2.3	-	-2.2	-2.3	-	-	-1.6	-
GLUTEN												
Wet gluten (14% mb), %	33.7	29.9	26.7	-	28.4	-	33.3	30.5	-	-	37.3	-
Dry gluten (14% mb), %	12.1	10.1	9.2	-	9.9	-	11.3	10.4	-	-	13.5	-
FARINOGRAM												
Water absorption (14% mb), %	60.3	58.9	59.7	-	59.2	-	62.0	61.4	-	-	62.4	-
Development time, min	4.0	4.2	4.5	-	5.2	-	4.7	3.5	-	-	6.2	-
Stability, min	6.4	6.3	6.6	-	8.9	-	5.6	3.9	-	-	17.4	-
Mixing tolerance index, BU	45	53	51	-	40	-	60	69	-	-	16	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	105	102	81	-	117	-	76	72	-	-	151	-
Maximum height, BU	360	370	340	-	450	-	290	270	-	-	470	-
Extensibility, mm	202	188	166	-	177	-	186	181	-	-	221	-
ALVEOGRAM												
Strength (S), cm ²	37.2	33.9	33.9	-	41.4	-	32.9	27.2	-	-	56.0	-
Stability (P), mm	67	64	76	-	84	-	71	70	-	-	99	-
Distensibility (L), mm	132	131	100	-	105	-	106	97	-	-	110	-
Configuration ratio (P/L)	0.51	0.49	0.76	-	0.80	-	0.67	0.72	-	-	0.90	-
MIXOGRAM												
Peak time, min	2.3	2.3	2.5	-	2.9	-	2.3	1.8	-	-	3.0	-
100g BAKING TEST												
Loaf volume, cm ³	925	895	810	-	875	-	940	885	-	-	995	-
Evaluation	0	0	0	-	0	-	0	0	-	-	2	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

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FARINOGRAM

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EXTENSOGRAM

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ALVEOGRAM

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**SOUTH AFRICAN
MAINLY IRRIGATION WHEAT
North-West Province**

PRODUCTION REGION	(14) North-West Southern Region					(15) North-West South-Eastern Region							
	ave	min	max	stdev		ave	min	max	stdev				
Intake silos	Amalia Barberspan Delareyville Excelsior Geysdorp Hallat's Hope Migdol Nooitgedacht Schweizer-Reneke Taaibospan					Bloemhof Christiana Hertzogville Hoopstad Kingwood							
WHEAT													
Protein (12% mb), %	12.4	9.8	15.7	1.87		12.1	10.4	14.5	1.53				
Falling number, sec	369	289	516	78.97		400	241	706	163.18				
1000 Kernel mass (13% mb), g	35.9	29.7	39.6	3.53		38.4	34.7	42.5	3.25				
Hectolitre mass (dirty), kg/hl	78.6	74.0	82.5	2.83		81.2	77.5	83.3	2.25				
Screenings (<1.8mm), %	2.40	1.46	4.80	1.10		1.60	1.31	2.12	0.30				
Total damaged kernels, %	0.58	0.20	1.72	0.54		0.57	0.14	1.80	0.63				
Number of samples	7					6							
CULTIVARS													
			SST 835	35.1				SST 835	43.3				
cultivars			SST 843	23.0				SST 843	42.2				
with highest %			CRN 826	19.1				CRN 826	8.3				
occurrence			Olifants	5.6				Duzi	2.8				
			PAN 3434	5.4				PAN 3349	2.3				
Number of samples	7					6							
MIXOGRAM (Quadromat)													
Peak time, min	ave	min	max	stdev		ave	min	max	stdev				
Tail height (6min), mm	2.5	1.8	3.4	0.53		2.9	2.2	3.8	0.61				
Number of samples	7					6							
BÜHLER EXTRACTION, %	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW	
	73.8	76.0	-	73.9	-	-	74.0	75.5	74.6	-	-	-	
FLOUR													
Protein (12% mb), %	12.0	11.1	-	8.5	-	-	12.6	10.5	9.6	-	-	-	
Colour, KJ	-2.4	-2.1	-	-2.4	-	-	-2.3	-2.1	-2.3	-	-	-	
GLUTEN													
Wet gluten (14% mb), %	35.9	31.4	-	20.5	-	-	37.3	29.0	26.8	-	-	-	
Dry gluten (14% mb), %	12.4	10.7	-	7.0	-	-	12.9	10.2	9.3	-	-	-	
FARINOGRAM													
Water absorption (14% mb), %	65.4	61.9	-	56.4	-	-	64.7	61.1	64.9	-	-	-	
Development time, min	5.7	3.8	-	1.8	-	-	5.0	4.4	2.0	-	-	-	
Stability, min	8.1	6.2	-	3.7	-	-	9.0	7.8	5.5	-	-	-	
Mixing tolerance index, BU	37	49	-	80	-	-	30	45	43	-	-	-	
EXTENSOGRAM (45 min pull)													
Area, cm2	78	67	-	56	-	-	87	103	80	-	-	-	
Maximum height, BU	330	280	-	270	-	-	340	400	370	-	-	-	
Extensibility, mm	173	166	-	144	-	-	182	176	157	-	-	-	
ALVEOGRAM													
Strength (S), cm2	42.7	29.8	-	22.0	-	-	49.2	39.9	38.5	-	-	-	
Stability (P), mm	119	75	-	54	-	-	107	98	127	-	-	-	
Distensibility (L), mm	62	90	-	98	-	-	90	78	51	-	-	-	
Configuration ratio (P/L)	1.91	0.84	-	0.55	-	-	1.19	1.26	2.50	-	-	-	
MIXOGRAM													
Peak time, min	2.3	2.0	-	2.5	-	-	2.5	2.5	2.5	-	-	-	
100g BAKING TEST													
Loaf volume, cm3	850	885	-	750	-	-	960	890	690	-	-	-	
Evaluation	2	0	-	0	-	-	0	0	3	-	-	-	

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

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FARINOGRAM

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EXTENSOGRAM

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ALVEOGRAM

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**SOUTH AFRICAN
MAINLY IRRIGATION WHEAT
North-West Province**

PRODUCTION REGION	(16) North-West Central Eastern Region					(17) North-West Central Northern Region (Ottosdal)						
	ave	min	max	stdev		ave	min	max	stdev			
Intake silos	Bamboesspruit Klerksdorp Leeudoringstad Makwassie Regina Strydpoort Wolmaranstad					Bospoort Hartbeesfontein (Lethabong) Kleinwarts Melliodora Ottosdal Rostrataville Vermaas Werda						
WHEAT												
Protein (12% mb), %	12.3	11.7	13.1	0.74		11.7	10.0	14.1	1.43			
Falling number, sec	418	396	439	21.50		361	283	419	47.17			
1000 Kernel mass (13% mb), g	33.7	32.3	35.7	1.78		38.6	33.6	42.0	2.80			
Hectolitre mass (dirty), kg/hl	76.4	73.8	79.1	2.65		79.3	77.2	81.7	1.98			
Screenings (<1.8mm), %	2.86	1.82	4.69	1.59		1.02	0.29	2.02	0.55			
Total damaged kernels, %	0.34	0.18	0.52	0.17		0.44	0.16	0.98	0.28			
Number of samples	3					8						
CULTIVARS												
cultivars	SST 835 59.3					SST 835 43.4						
with highest % occurrence	CRN 826 23.7					SST 88 11.6						
	SST 843 6.0					SST 027 7.5						
	Olifants 5.0					SST 806 7.3						
	SST 876 4.3					CRN 826 7.0						
Number of samples	3					8						
MIXOGRAM (Quadromat)												
Peak time, min	ave	min	max	stdev		ave	min	max	stdev			
Tail height (6min), mm	2.4	2.0	2.7	0.35		2.5	2.0	3.0	0.32			
Number of samples	3					8						
BÜHLER EXTRACTION, %	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	74.8	75.9	-	-	-	-	73.2	75.2	76.3	-	-	-
FLOUR												
Protein (12% mb), %	12.5	10.9	-	-	-	-	12.4	11.2	9.2	-	-	-
Colour, KJ	-2.3	-2.4	-	-	-	-	-2.2	-2.3	-2.5	-	-	-
GLUTEN												
Wet gluten (14% mb), %	34.5	31.5	-	-	-	-	34.1	30.8	25.2	-	-	-
Dry gluten (14% mb), %	11.9	10.3	-	-	-	-	12.4	10.1	8.6	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	61.0	61.5	-	-	-	-	62.1	62.2	59.5	-	-	-
Development time, min	4.8	3.7	-	-	-	-	4.7	4.0	3.3	-	-	-
Stability, min	7.3	3.8	-	-	-	-	5.9	5.9	4.3	-	-	-
Mixing tolerance index, BU	42	78	-	-	-	-	49	61	73	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm2	98	54	-	-	-	-	97	102	59	-	-	-
Maximum height, BU	330	230	-	-	-	-	335	330	270	-	-	-
Extensibility, mm	206	183	-	-	-	-	204	209	150	-	-	-
ALVEOGRAM												
Strength (S), cm2	39.6	28.0	-	-	-	-	40.2	35.9	27.7	-	-	-
Stability (P), mm	74	68	-	-	-	-	78	84	74	-	-	-
Distensibility (L), mm	125	103	-	-	-	-	125	91	88	-	-	-
Configuration ratio (P/L)	0.59	0.66	-	-	-	-	0.62	0.93	0.84	-	-	-
MIXOGRAM												
Peak time, min	2.1	2.0	-	-	-	-	2.2	2.2	2.2	-	-	-
100g BAKING TEST												
Loaf volume, cm3	1000	910	-	-	-	-	945	895	850	-	-	-
Evaluation	0	0	-	-	-	-	0	0	0	-	-	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

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FARINOGRAM

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EXTENSOGRAM

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ALVEOGRAM

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**SOUTH AFRICAN
MAINLY IRRIGATION WHEAT
North-West Province**

PRODUCTION REGION	(18) North-West Central Region (Ventersdorp)					(19) North-West Central Region (Lichtenburg)								
	Intake silos					Intake silos								
	Bodenstein Buckingham Coligny Enselspruit Makokskraal Potchefstroom Ventersdorp					Grootpan Halfpad Hibernia Lichtenburg Lottiehalte Lusthof								
WHEAT	ave	min	max	stdev		ave	min	max	stdev					
Protein (12% mb), %	12.3	11.6	12.9	0.92		11.4	10.0	13.0	1.00					
Falling number, sec	361	349	372	16.26		361	298	401	38.21					
1000 Kernel mass (13% mb), g	39.1	38.4	39.8	0.99		37.1	34.6	39.6	1.89					
Hectolitre mass (dirty), kg/hl	80.7	80.4	81.0	0.42		79.8	75.8	83.3	2.58					
Screenings (<1.8mm), %	1.62	1.45	1.79	0.24		1.82	0.64	4.14	1.01					
Total damaged kernels, %	1.52	1.12	1.92	0.57		0.36	0.06	1.86	0.55					
Number of samples	2					10								
CULTIVARS														
	SST 835 49.5					SST 835 49.2								
cultivars	SST 843 29.0					SST 843 21.3								
with highest %	CRN 826 11.5					CRN 826 14.1								
occurrence	Duzi 4.5					Duzi 7.6								
	PAN 3349 3.0					SST 876 4.0								
Number of samples	2					10								
MIXOGRAM (Quadromat)	ave	min	max	stdev		ave	min	max	stdev					
Peak time, min	2.6	2.5	2.7	0.14		2.6	2.3	3.3	0.31					
Tail height (6min), mm	48	45	50	3.54		48	42	56	3.81					
Number of samples	2					10								
BÜHLER EXTRACTION, %	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW		
	-	-	-	-	-	-	75.3	76.5	75.6	-	-	-		
FLOUR														
Protein (12% mb), %	-	-	-	-	-	-	11.5	10.9	10.5	-	-	-		
Colour, KJ	-	-	-	-	-	-	-2.5	-2.3	-2.1	-	-	-		
GLUTEN														
Wet gluten (14% mb), %	-	-	-	-	-	-	32.2	30.6	29.3	-	-	-		
Dry gluten (14% mb), %	-	-	-	-	-	-	11.5	10.3	9.8	-	-	-		
FARINOGRAM														
Water absorption (14% mb), %	-	-	-	-	-	-	61.5	61.8	61.0	-	-	-		
Development time, min	-	-	-	-	-	-	4.4	4.0	3.4	-	-	-		
Stability, min	-	-	-	-	-	-	6.8	6.1	5.0	-	-	-		
Mixing tolerance index, BU	-	-	-	-	-	-	45	47	59	-	-	-		
EXTENSOGRAM (45 min pull)														
Area, cm ²	-	-	-	-	-	-	97	73	64	-	-	-		
Maximum height, BU	-	-	-	-	-	-	345	295	245	-	-	-		
Extensibility, mm	-	-	-	-	-	-	201	175	180	-	-	-		
ALVEOGRAM														
Strength (S), cm ²	-	-	-	-	-	-	41.0	32.1	28.7	-	-	-		
Stability (P), mm	-	-	-	-	-	-	80	78	72	-	-	-		
Distensibility (L), mm	-	-	-	-	-	-	112	91	93	-	-	-		
Configuration ratio (P/L)	-	-	-	-	-	-	0.72	0.85	0.78	-	-	-		
MIXOGRAM														
Peak time, min	-	-	-	-	-	-	2.4	2.3	2.3	-	-	-		
100g BAKING TEST														
Loaf volume, cm ³	-	-	-	-	-	-	890	845	865	-	-	-		
Evaluation	-	-	-	-	-	-	0	0	0	-	-	-		

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

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FARINOGRAM

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EXTENSOGRAM

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ALVEOGRAM

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**SOUTH AFRICAN
MAINLY IRRIGATION WHEAT
North-West Province**

**SUMMER RAINFALL WHEAT
(AND IRRIGATION)
Free State Province (Central)**

PRODUCTION REGION	(20)					(21)								
	North-West Eastern Region					Free State North-Western Region (Viljoenskroon)								
Intake silos	Battery Boons Brits Derby Koster Rustenburg Swartruggens Syferbult					Attie Groenebloem Heuningspruit Koppies Rooiwal Vierfontein Viljoenskroon Vredefort Weiveld								
WHEAT	ave	min	max	stdev		ave	min	max	stdev					
Protein (12% mb), %	11.3	9.9	13.0	1.06		12.0	9.8	13.3	1.50					
Falling number, sec	393	342	509	52.70		384	349	446	39.01					
1000 Kernel mass (13% mb), g	38.5	32.0	42.8	3.60		39.7	35.4	49.4	5.58					
Hectolitre mass (dirty), kg/hl	79.4	76.2	82.0	2.01		81.4	80.2	82.2	0.86					
Screenings (<1.8mm), %	1.57	0.56	3.00	0.74		1.30	1.00	2.08	0.45					
Total damaged kernels, %	0.33	0.16	0.58	0.14		0.16	0.08	0.32	0.09					
Number of samples	10					5								
CULTIVARS														
	SST 835 34.5					PAN 3120 21.4								
cultivars	Kariega 17.3					PAN 3377 18.4								
with highest %	Duzi 16.1					SST 027 8.8								
occurrence	Baviaans 7.4					SST 88 8.4								
	CRN 826 6.5					SST 835 8.2								
Number of samples	10					5								
MIXOGRAM (Quadromat)	ave	min	max	stdev		ave	min	max	stdev					
Peak time, min	2.9	2.0	3.0	0.57		2.5	2.2	2.8	0.25					
Tail height (6min), mm	47	43	55	3.65		50	44	54	4.24					
Number of samples	10					5								
BÜHLER EXTRACTION, %	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW		
	75.6	76.5	76.5	-	-	-	74.6	74.8	-	74.9	-	-		
FLOUR														
Protein (12% mb), %	11.7	10.6	9.7	-	-	-	11.7	10.3	-	8.7	-	-		
Colour, KJ	-1.6	-2.4	-2.3	-	-	-	-2.1	-2.3	-	-1.5	-	-		
GLUTEN														
Wet gluten (14% mb), %	30.9	28.4	25.7	-	-	-	32.8	28.3	-	26.4	-	-		
Dry gluten (14% mb), %	10.8	9.8	8.6	-	-	-	11.5	9.6	-	9.9	-	-		
FARINOGRAM														
Water absorption (14% mb), %	60.9	60.0	58.0	-	-	-	62.4	65.1	-	60.6	-	-		
Development time, min	4.7	4.0	3.8	-	-	-	5.0	4.0	-	2.2	-	-		
Stability, min	7.7	6.2	6.4	-	-	-	7.3	7.9	-	4.2	-	-		
Mixing tolerance index, BU	48	48	50	-	-	-	48	36	-	69	-	-		
EXTENSOGRAM (45 min pull)														
Area, cm2	100	86	80	-	-	-	90	99	-	52	-	-		
Maximum height, BU	355	320	350	-	-	-	360	390	-	260	-	-		
Extensibility, mm	200	187	163	-	-	-	179	180	-	135	-	-		
ALVEOGRAM														
Strength (S), cm2	38.7	31.2	30.1	-	-	-	44.3	45.1	-	23.5	-	-		
Stability (P), mm	78	69	64	-	-	-	96	120	-	85	-	-		
Distensibility (L), mm	105	103	107	-	-	-	96	71	-	56	-	-		
Configuration ratio (P/L)	0.74	0.68	0.59	-	-	-	1.01	1.70	-	1.52	-	-		
MIXOGRAM														
Peak time, min	3.0	2.5	2.8	-	-	-	2.4	2.1	-	1.8	-	-		
100g BAKING TEST														
Loaf volume, cm3	900	915	860	-	-	-	920	760	-	695	-	-		
Evaluation	0	0	0	-	-	-	0	2	-	1	-	-		

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

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FARINOGRAM

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EXTENSOGRAM

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ALVEOGRAM

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SOUTH AFRICAN

SUMMER RAINFALL WHEAT (AND IRRIGATION)

Free State Province (Central)

PRODUCTION REGION	(26) Free State South-Eastern Region (Senekal)					(27) Free State Northern Region						
	Intake silos											
	Arlington Kaallaagte Libertas Marquard Meets Monte Video Senekal Steynsrus					Gottenburg Heilbron Hoogte Mooigeleë Petrus Steyn Wolwehoek						
WHEAT	ave	min	max	stdev		ave	min	max	stdev			
Protein (12% mb), %	12.2	10.9	13.6	0.90		12.0	10.9	13.7	0.93			
Falling number, sec	348	227	415	48.16		411	295	479	61.56			
1000 Kernel mass (13% mb), g	38.3	35.2	43.1	2.09		37.9	35.3	41.2	2.18			
Hectolitre mass (dirty), kg/hl	79.9	74.1	82.5	2.18		79.8	79.2	80.6	0.53			
Screenings (<1.8mm), %	1.36	0.81	3.12	0.54		1.37	0.30	2.35	0.85			
Total damaged kernels, %	0.35	0.06	0.76	0.23		0.33	0.00	0.90	0.34			
Number of samples	22					7						
CULTIVARS												
	Elands 42.0					Elands 36.7						
cultivars	SST 356 8.6					Matlabas 17.7						
with highest %	Gariep 8.4					PAN 3120 11.6						
occurrence	PAN 3120 8.2					SST 835 10.0						
	PAN 3118 6.4					PAN 3191 7.7						
Number of samples	22					7						
MIXOGRAM (Quadromat)	ave	min	max	stdev		ave	min	max	stdev			
Peak time, min	3.5	2.4	4.5	0.42		3.3	2.8	3.8	0.39			
Tail height (6min), mm	56	47	66	4.67		55	49	68	5.94			
Number of samples	22					7						
BÜHLER EXTRACTION, %	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	73.4	73.9	73.3	-	75.5	-	74.1	74.0	73.7	-	-	-
FLOUR												
Protein (12% mb), %	11.7	10.7	11.0	-	9.7	-	11.7	10.7	9.4	-	-	-
Colour, KJ	-2.2	-2.3	-1.6	-	-2.2	-	-2.0	-2.1	-2.5	-	-	-
GLUTEN												
Wet gluten (14% mb), %	31.2	27.1	27.6	-	26.8	-	30.0	28.5	24.9	-	-	-
Dry gluten (14% mb), %	11.4	10.0	10.1	-	9.5	-	10.7	10.2	8.5	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	62.4	61.7	60.9	-	59.5	-	65.0	61.9	62.6	-	-	-
Development time, min	2.7	2.5	3.0	-	3.5	-	6.9	2.9	5.3	-	-	-
Stability, min	9.9	9.7	8.9	-	5.9	-	18.2	9.4	9.1	-	-	-
Mixing tolerance index, BU	22	22	29	-	52	-	17	18	31	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	126	101	108	-	73	-	119	99	67	-	-	-
Maximum height, BU	470	475	445	-	335	-	440	405	330	-	-	-
Extensibility, mm	187	152	173	-	155	-	184	158	139	-	-	-
ALVEOGRAM												
Strength (S), cm ²	53.8	45.6	46.6	-	30.3	-	53.2	43.6	31.7	-	-	-
Stability (P), mm	123	129	109	-	76	-	147	118	115	-	-	-
Distensibility (L), mm	77	59	77	-	88	-	62	66	47	-	-	-
Configuration ratio (P/L)	1.60	2.17	1.43	-	0.86	-	2.38	1.79	2.46	-	-	-
MIXOGRAM												
Peak time, min	3.3	3.3	3.5	-	2.3	-	3.3	3.2	2.3	-	-	-
100g BAKING TEST												
Loaf volume, cm ³	865	800	820	-	840	-	820	830	740	-	-	-
Evaluation	1	1	1	-	0	-	3	0	1	-	-	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

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SOUTH AFRICAN
SUMMER RAINFALL WHEAT (AND IRRIGATION)
Free State Province (North-Western)

PRODUCTION REGION	(22) Free-State North-Western Region (Bothaville)				(23) Free-State North-Western Region (Bultfontein)							
	ave	min	max	stdev	ave	min	max	stdev				
Intake silos	Allanridge Bothaville Mirage Odendaalsrus Schoonspruit Schuttendraai				Bultfontein Losdoorns Protespan Tierfontein Wesselsbron Willemsrust							
WHEAT												
Protein (12% mb), %	12.1	10.6	14.3	1.41	11.6	9.0	13.9	1.47				
Falling number, sec	367	300	485	66.86	325	211	409	56.68				
1000 Kernel mass (13% mb), g	39.3	36.4	42.1	1.93	38.5	33.9	41.2	1.97				
Hectolitre mass (dirty), kg/hl	82.6	81.2	84.2	1.09	81.5	78.9	83.1	1.17				
Screenings (<1.8mm), %	0.91	0.44	1.15	0.25	1.67	0.69	3.10	0.53				
Total damaged kernels, %	0.44	0.18	1.10	0.30	0.29	0.12	0.68	0.16				
Number of samples	8				15							
CULTIVARS												
cultivars	PAN 3120 24.9				PAN 3120 31.3							
with highest % occurrence	SST 835 22.6				PAN 3118 20.9							
	PAN 3355 17.4				CRN 826 12.7							
	PAN 3118 9.9				Gariep 10.3							
	SST 843 8.1				SST 835 7.9							
Number of samples	8				15							
MIXOGRAM (Quadromat)												
Peak time, min	ave	min	max	stdev	ave	min	max	stdev				
Tail height (6min), mm	3.0	2.3	3.8	0.48	3.1	1.9	4.5	0.74				
Number of samples	8				15							
BÜHLER EXTRACTION, %												
	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	74.5	74.3	75.1	-	-	-	75.4	74.9	74.1	74.1	-	-
FLOUR												
Protein (12% mb), %	12.1	10.3	9.4	-	-	-	11.5	10.3	9.5	8.3	-	-
Colour, KJ	-2.4	-2.4	-2.3	-	-	-	-2.0	-2.3	-2.0	-2.5	-	-
GLUTEN												
Wet gluten (14% mb), %	32.8	27.4	25.6	-	-	-	27.9	33.1	24.5	20.6	-	-
Dry gluten (14% mb), %	11.8	9.8	8.7	-	-	-	9.7	11.6	8.6	7.2	-	-
FARINOGRAM												
Water absorption (14% mb), %	63.5	63.9	61.0	-	-	-	63.3	61.3	60.9	60.1	-	-
Development time, min	5.7	2.3	1.7	-	-	-	4.5	3.8	2.4	2.0	-	-
Stability, min	8.8	7.5	5.7	-	-	-	7.1	8.4	5.8	3.1	-	-
Mixing tolerance index, BU	41	28	41	-	-	-	43	35	47	76	-	-
EXTENSOGRAM (45 min pull)												
Area, cm2	118	92	83	-	-	-	94	117	118	82	-	-
Maximum height, BU	400	385	360	-	-	-	350	435	455	390	-	-
Extensibility, mm	209	169	159	-	-	-	188	186	180	147	-	-
ALVEOGRAM												
Strength (S), cm2	52.0	46.3	36.2	-	-	-	41.3	44.5	43.7	32.6	-	-
Stability (P), mm	106	125	101	-	-	-	101	100	114	107	-	-
Distensibility (L), mm	97	67	69	-	-	-	80	84	68	50	-	-
Configuration ratio (P/L)	1.09	1.87	1.45	-	-	-	1.27	1.14	1.68	2.15	-	-
MIXOGRAM												
Peak time, min	2.5	3.2	3.2	-	-	-	2.4	3.0	3.5	3.0	-	-
100g BAKING TEST												
Loaf volume, cm3	940	850	820	-	-	-	935	835	790	715	-	-
Evaluation	0	0	0	-	-	-	0	0	0	0	-	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

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**SOUTH AFRICAN
SUMMER RAINFALL WHEAT (AND IRRIGATION)
Free State Province (Eastern)**

PRODUCTION REGION	(25) Free State South-Western Region (Bethlehem)					(28) Free State Eastern Region						
	Intake silos					Afrikaskop				Tweeling		
	Bethlehem					Ascent				Villiers		
	Clocolan					Cornelia				Vrede		
	De Wetsdorp					Daniëlsrus				Warden		
	Ficksburg					Eeram				Windfield		
	Fouriesburg					Frankfort						
	Marseilles					Harrismith						
	Modderpoort					Jim Fouché						
	Slabberts					Kransfontein						
	Tweespruit					Memel						
	Westminster					Reitz						
	Zastron											
WHEAT												
	ave	min	max	stdev		ave	min	max	stdev			
Protein (12% mb), %	11.7	9.1	14.9	1.25		12.2	10.2	15.1	1.08			
Falling number, sec	361	242	458	46.13		372	297	482	40.77			
1000 Kernel mass (13% mb), g	38.5	33.5	43.5	2.62		38.9	30.1	44.8	2.49			
Hectolitre mass (dirty), kg/hl	78.8	74.2	81.9	2.04		79.0	74.8	81.9	1.76			
Screenings (<1.8mm), %	1.33	0.05	3.08	0.76		0.78	0.08	1.88	0.37			
Total damaged kernels, %	0.20	0.00	0.58	0.14		0.16	0.00	0.68	0.14			
Number of samples	35					34						
CULTIVARS												
	Elands 27.6					Elands 37.8						
cultivars	SST 356 13.9					SST 835 15.6						
with highest %	SST 835 11.0					SST 356 14.3						
occurrence	PAN 3118 8.8					Matlabas 6.4						
	Matlabas 7.7					Duzi 4.0						
Number of samples	35					34						
MIXOGRAM (Quadromat)												
	ave	min	max	stdev		ave	min	max	stdev			
Peak time, min	3.5	2.4	5.3	0.66		3.7	2.3	4.6	0.54			
Tail height (6min), mm	52	41	61	4.39		54	47	60	3.10			
Number of samples	35					34						
BÜHLER EXTRACTION, %												
	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	73.2	73.4	72.7	71.3	72.5	-	74.0	73.4	73.5	-	-	-
FLOUR												
Protein (12% mb), %	11.4	10.2	9.3	8.2	10.1	-	11.7	10.5	9.7	-	-	-
Colour, KJ	-2.0	-2.0	-2.4	-2.5	-2.4	-	-2.6	-2.1	-2.4	-	-	-
GLUTEN												
Wet gluten (14% mb), %	30.7	26.9	23.3	-	27.1	-	30.0	27.0	24.1	-	-	-
Dry gluten (14% mb), %	10.5	9.3	8.3	-	9.7	-	10.5	9.5	8.4	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	62.9	62.8	61.0	62.4	59.8	-	62.1	61.0	59.7	-	-	-
Development time, min	5.0	2.5	2.0	1.7	2.3	-	5.5	2.5	2.0	-	-	-
Stability, min	9.2	7.5	2.6	1.8	5.9	-	12.4	9.0	6.6	-	-	-
Mixing tolerance index, BU	38	29	83	88	43	-	23	30	40	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm2	95	92	90	60	88	-	105	94	82	-	-	-
Maximum height, BU	390	400	410	350	415	-	415	415	375	-	-	-
Extensibility, mm	173	156	160	118	150	-	181	158	152	-	-	-
ALVEOGRAM												
Strength (S), cm2	45.9	39.1	33.3	22.6	36.9	-	50.5	43.9	36.9	-	-	-
Stability (P), mm	113	128	112	128	97	-	105	114	96	-	-	-
Distensibility (L), mm	75	51	49	26	70	-	89	69	74	-	-	-
Configuration ratio (P/L)	1.51	2.50	2.29	4.96	1.38	-	1.18	1.66	1.29	-	-	-
MIXOGRAM												
Peak time, min	2.8	3.3	3.4	4.4	2.5	-	3.3	3.3	2.8	-	-	-
100g BAKING TEST												
Loaf volume, cm3	920	815	785	640	800	-	885	760	755	-	-	-
Evaluation	0	0	0	2	0	-	1	2	1	-	-	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

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SOUTH AFRICAN

SUMMER RAINFALL WHEAT (AND IRRIGATION) Free State Province (South-Western)

OTHER SUMMER RAINFALL AND IRRIGATION WHEAT

Mpumalanga

(32)
Mpumalanga
Western Region

PRODUCTION REGION	(24) Free State Central Region				(32) Mpumalanga Western Region								
Intake silos	Bloemfontein Brandfort De Brug Geneva Hennenman Koffiefontein Kroonstad Petrusburg Theunissen Van Tonder	Welgeleë Winburg			Argent Dryden Endicott Elof Hawerklip Kendal Ogies								
WHEAT													
	ave	min	max	stdev	ave	min	max	stdev					
Protein (12% mb), %	11.8	9.2	13.5	1.16	11.5	10.2	12.8	0.98					
Falling number, sec	322	193	584	73.11	278	177	339	62.10					
1000 Kernel mass (13% mb), g	37.5	30.4	44.1	3.28	41.7	40.9	42.7	0.71					
Hectolitre mass (dirty), kg/hl	80.8	77.3	84.2	1.64	81.6	80.7	82.3	0.72					
Screenings (<1.8mm), %	1.47	0.34	2.79	0.71	0.63	0.50	0.81	0.13					
Total damaged kernels, %	0.61	0.00	3.28	0.67	1.95	1.18	3.48	0.91					
Number of samples	29				5								
CULTIVARS													
		PAN 3120	17.9		SST 835	62.8							
cultivars with highest % occurrence		SST 835	14.8		SST 806	23.8							
		Gariep	12.8		SST 876	7.4							
		PAN 3118	12.4		Duzi	5.0							
		Elands	7.4		Olifants	1.0							
Number of samples	29				5								
MIXOGRAM (Quadromat)													
	ave	min	max	stdev	ave	min	max	stdev					
Peak time, min	3.0	1.9	3.8	0.44	2.9	2.7	3.2	0.20					
Tail height (6min), mm	52	42	61	4.77	47	44	49	1.92					
Number of samples	29				5								
BÜHLER EXTRACTION, %													
	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW	
	74.1	73.8	73.8	71.8	74.2	-	-	76.7	76.2	-	76.7	-	
FLOUR													
Protein (12% mb), %	11.7	10.2	9.4	7.9	10.0	-	-	10.7	9.8	-	10.9	-	
Colour, KJ	-1.9	-2.0	-2.3	-2.0	-2.3	-	-	-2.1	-2.2	-	-1.9	-	
GLUTEN													
Wet gluten (14% mb), %	32.5	27.8	25.3	18.5	27.6	-	-	30.3	26.9	-	29.8	-	
Dry gluten (14% mb), %	11.4	10.1	8.8	6.5	9.9	-	-	10.5	8.9	-	10.2	-	
FARINOGRAM													
Water absorption (14% mb), %	61.4	60.4	60.5	55.7	60.7	-	-	61.5	60.4	-	60.6	-	
Development time, min	4.3	2.8	2.5	1.7	3.7	-	-	3.8	3.7	-	3.0	-	
Stability, min	7.9	6.9	5.6	3.2	5.6	-	-	6.0	5.7	-	6.0	-	
Mixing tolerance index, BU	40	42	53	83	67	-	-	52	56	-	48	-	
EXTENSOGRAM (45 min pull)													
Area, cm ²	110	92	69	77	84	-	-	87	75	-	104	-	
Maximum height, BU	410	385	340	380	350	-	-	325	315	-	360	-	
Extensibility, mm	182	171	141	143	173	-	-	190	171	-	199	-	
ALVEOGRAM													
Strength (S), cm ²	43.7	38.8	33.2	22.6	38.5	-	-	37.8	30.7	-	35.6	-	
Stability (P), mm	90	97	92	78	86	-	-	78	76	-	73	-	
Distensibility (L), mm	98	77	72	48	90	-	-	108	86	-	110	-	
Configuration ratio (P/L)	0.92	1.26	1.29	1.61	0.96	-	-	0.72	0.88	-	0.66	-	
MIXOGRAM													
Peak time, min	2.5	2.8	2.7	3.3	3.0	-	-	2.5	2.6	-	2.7	-	
100g BAKING TEST													
Loaf volume, cm ³	935	845	800	670	795	-	-	910	810	-	870	-	
Evaluation	0	0	0	0	0	-	-	0	0	-	0	-	

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

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SOUTH AFRICAN OTHER SUMMER RAINFALL AND IRRIGATION WHEAT Mpumalanga

PRODUCTION REGION	(33) Mpumalanga Northern Region					(34) Gauteng						
Intake silos	Driefontein Lydenburg Marble Hall Middelburg Stoffelberg Pan Arnot Wonderfontein					Bloekomspruit Bronkhorstspruit Glenroy Goeie Hoek Kaalfontein Middelvlei Nigel Oberholzer Raathsvlei						
WHEAT												
	ave	min	max	stdev		ave	min	max	stdev			
Protein (12% mb), %	11.8	10.7	12.8	0.72		12.3	11.5	13.0	0.74			
Falling number, sec	372	223	482	96.15		416	328	534	85.72			
1000 Kernel mass (13% mb), g	41.8	38.5	43.8	1.51		40.2	37.7	41.8	1.69			
Hectolitre mass (dirty), kg/hl	78.6	75.4	80.5	1.67		80.3	79.5	82.0	0.98			
Screenings (<1.8mm), %	0.46	0.11	0.87	0.24		1.19	0.79	1.74	0.37			
Total damaged kernels, %	1.00	0.12	3.08	0.93		0.18	0.06	0.28	0.11			
Number of samples	9					5						
CULTIVARS												
	Duzi 35.7					SST 835 29.4						
cultivars	SST 835 24.1					Duzi 28.2						
with highest %	Kariega 12.7					SST 843 17.6						
occurrence	SST 876 10.4					SST 876 13.6						
	Krokodil 4.0					Kariega 9.4						
Number of samples	9					5						
MIXOGRAM (Quadromat)												
	ave	min	max	stdev		ave	min	max	stdev			
Peak time, min	3.5	2.9	4.4	0.56		2.6	2.3	2.9	0.29			
Tail height (6min), mm	49	46	53	2.24		48	46	51	1.79			
Number of samples	9					5						
BÜHLER EXTRACTION, %	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	76.3	75.2	-	-	-	76.5	75.3	76.3	-	-	-	-
FLOUR												
Protein (12% mb), %	11.3	10.7	-	-	-	10.2	11.5	10.8	-	-	-	-
Colour, KJ	-2.0	-2.3	-	-	-	-1.8	-2.0	-2.3	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	30.1	27.9	-	-	-	27.1	32.1	29.7	-	-	-	-
Dry gluten (14% mb), %	10.3	9.7	-	-	-	9.2	10.9	10.2	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	60.8	59.4	-	-	-	57.4	60.9	60.6	-	-	-	-
Development time, min	5.5	2.9	-	-	-	1.9	4.9	4.5	-	-	-	-
Stability, min	8.6	8.8	-	-	-	7.1	7.3	6.3	-	-	-	-
Mixing tolerance index, BU	38	26	-	-	-	33	39	44	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	114	117	-	-	-	85	100	80	-	-	-	-
Maximum height, BU	390	405	-	-	-	350	380	320	-	-	-	-
Extensibility, mm	186	203	-	-	-	172	186	179	-	-	-	-
ALVEOGRAM												
Strength (S), cm ²	38.1	39.3	-	-	-	27.8	42.4	33.5	-	-	-	-
Stability (P), mm	84	75	-	-	-	61	80	76	-	-	-	-
Distensibility (L), mm	95	107	-	-	-	98	119	99	-	-	-	-
Configuration ratio (P/L)	0.88	0.70	-	-	-	0.62	0.67	0.77	-	-	-	-
MIXOGRAM												
Peak time, min	2.8	3.3	-	-	-	3.3	2.5	2.3	-	-	-	-
100g BAKING TEST												
Loaf volume, cm ³	875	850	-	-	-	890	875	840	-	-	-	-
Evaluation	0	0	-	-	-	0	1	0	-	-	-	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

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**SOUTH AFRICAN
OTHER SUMMER RAINFALL AND IRRIGATION WHEAT
Limpopo and KwaZulu-Natal Provinces**

PRODUCTION REGION	(35) Limpopo					(36) KwaZulu-Natal									
Intake silos	Alma Crecy Immerpan Lehau Naboomspruit (Mookgophong) Northam Nutfield Nylstroom (Modimolle) Pienaarsrivier Pietersburg (Polokwane)					Potgietersrus (Mokopane) Roedtan Settlers Tzaneen Vaalwater Warmbad (Bela-Bela)					Bergville Bloedrivier Dannhauser Dundee Mizpah New Amalfi Paulpietersburg Vryheid Winterton				
WHEAT															
	ave	min	max	stdev		ave	min	max	stdev						
Protein (12% mb), %	11.8	10.0	13.8	1.20		12.8	11.3	13.9	0.79						
Falling number, sec	386	306	456	51.52		348	198	408	60.67						
1000 Kernel mass (13% mb), g	39.6	33.5	43.3	2.66		40.2	36.6	45.2	2.51						
Hectolitre mass (dirty), kg/hl	79.7	77.5	83.9	1.97		81.2	79.0	83.2	1.45						
Screenings (<1.8mm), %	1.40	0.50	2.36	0.62		0.83	0.27	2.26	0.57						
Total damaged kernels, %	0.88	0.00	3.58	0.85		1.09	0.16	3.92	1.14						
Number of samples	14					10									
CULTIVARS															
	SST 835					SST 835									
	28.4					61.0									
cultivars	Duzi					SST 843									
	21.5					16.2									
with highest %	SST 876					SST 876									
occurrence	14.6					10.7									
	SST 843					Baviaans									
	9.5					4.2									
	CRN 826					SST 806									
	5.9					2.4									
Number of samples	14					10									
MIXOGRAM (Quadromat)															
	ave	min	max	stdev		ave	min	max	stdev						
Peak time, min	3.2	2.0	6.0	0.96		3.1	2.7	4.1	0.48						
Tail height (6min), mm	49	42	57	4.83		52	49	56	2.31						
Number of samples	14					10									
BÜHLER EXTRACTION, %	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW			
	75.8	76.2	76.8	-	-	-	76.7	76.2	-	-	78.1	-			
FLOUR															
Protein (12% mb), %	12.0	10.7	9.1	-	-	-	11.5	10.0	-	-	11.8	-			
Colour, KJ	-1.9	-1.9	-2.1	-	-	-	-2.2	-2.6	-	-	-1.7	-			
GLUTEN															
Wet gluten (14% mb), %	31.2	29.3	23.8	-	-	-	31.8	25.5	-	-	33.1	-			
Dry gluten (14% mb), %	11.3	9.8	7.9	-	-	-	10.9	8.8	-	-	11.2	-			
FARINOGRAM															
Water absorption (14% mb), %	61.4	60.2	57.5	-	-	-	61.1	58.6	-	-	61.1	-			
Development time, min	6.5	3.3	2.2	-	-	-	5.3	1.8	-	-	4.2	-			
Stability, min	12.3	6.8	5.7	-	-	-	8.6	7.6	-	-	5.1	-			
Mixing tolerance index, BU	24	41	52	-	-	-	40	42	-	-	63	-			
EXTENSOGRAM (45 min pull)															
Area, cm ²	123	73	70	-	-	-	105	105	-	-	95	-			
Maximum height, BU	400	295	305	-	-	-	375	435	-	-	310	-			
Extensibility, mm	210	172	163	-	-	-	193	170	-	-	214	-			
ALVEOGRAM															
Strength (S), cm ²	49.5	31.8	27.5	-	-	-	46.0	39.8	-	-	34.7	-			
Stability (P), mm	98	74	68	-	-	-	85	87	-	-	69	-			
Distensibility (L), mm	98	92	86	-	-	-	114	84	-	-	125	-			
Configuration ratio (P/L)	1.00	81	0.79	-	-	-	0.75	1.04	-	-	0.55	-			
MIXOGRAM															
Peak time, min	3.3	2.8	2.4	-	-	-	2.8	3.7	-	-	2.3	-			
100g BAKING TEST															
Loaf volume, cm ³	905	875	815	-	-	-	900	860	-	-	860	-			
f-Evaluation	1	0	0	-	-	-	0	0	-	-	2	-			

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

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FARINOGRAM

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EXTENSOGRAM

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ALVEOGRAM

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WEIGHTED AVERAGE RESULTS FOR THE LAST THREE SEASONS

Region	2009/2010					2008/2009					2007/2008				
	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	11.2	299	78.7	2.9	4	11.2	435	79.7	2.7	4	11.5	397	77.4	2.7	6
2	11.4	314	77.8	2.6	30	10.3	390	76.7	3.0	24	10.6	374	75.0	3.2	23
3	10.9	351	79.5	2.5	63	10.5	395	77.7	2.7	71	10.4	373	77.8	3.0	78
4	10.6	382	80.1	2.5	23	10.3	377	79.4	2.7	14	10.5	366	78.1	3.0	35
5	11.1	379	80.0	2.5	30	11.7	304	77.6	2.4	19	11.0	370	78.7	2.5	15
6	11.8	355	79.3	2.4	24	11.8	339	78.0	2.5	34	10.5	362	78.5	2.8	34
7	12.2	375	79.5	2.7	2	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	13.1	397	76.4	2.9	4	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	12.1	421	82.6	2.2	27	11.6	430	79.0	2.6	23	11.0	413	79.4	2.5	17
11	12.5	454	80.6	2.8	26	11.8	446	77.5	2.8	24	11.3	388	78.2	2.4	9
12	13.1	414	79.2	2.6	7	13.5	446	75.8	3.0	7	11.8	363	74.9	2.8	3
13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	12.4	369	78.6	2.5	7	-	-	-	-	-	12.1	381	74.7	3.0	6
15	12.1	400	81.2	2.9	6	12.9	467	76.0	2.6	9	11.8	400	77.6	3.0	10
16	12.3	418	76.4	2.4	3	-	-	-	-	-	-	-	-	-	-
17	11.7	361	79.3	2.5	8	13.8	344	74.1	2.8	6	11.8	399	77.1	2.9	3
18	12.3	361	80.7	2.6	2	12.3	329	77.6	2.7	3	11.1	365	77.3	2.8	6
19	11.4	361	79.8	2.6	10	12.2	396	76.2	2.6	13	11.4	385	77.6	2.7	10
20	11.3	393	79.4	2.9	10	11.6	411	76.4	3.3	25	11.2	360	77.4	2.7	13
21	12.0	384	81.4	2.5	5	11.5	426	77.8	2.8	2	12.0	354	78.4	3.6	8
22	12.1	367	82.6	3.0	8	14.1	320	76.8	2.9	10	12.1	383	77.8	2.7	6
23	11.6	325	81.5	3.1	15	12.9	379	77.2	2.9	23	11.5	367	77.7	3.0	25
24	11.8	322	80.8	3.0	29	13.4	347	76.1	3.3	17	11.6	344	77.7	2.9	26
25	11.7	361	78.8	3.5	35	13.5	314	77.6	3.4	31	10.6	325	78.1	3.5	32
26	12.2	348	79.9	3.5	22	14.0	320	77.2	3.6	25	11.1	312	79.2	3.6	26
27	12.0	411	79.8	3.3	7	12.8	370	77.9	3.4	3	11.1	298	80.2	3.2	10
28	12.2	372	79.0	3.7	34	13.2	376	78.5	3.2	29	10.8	337	80.5	3.3	32
29	-	-	-	-	-	-	-	-	-	-	12.6	388	78.1	2.3	3
30	-	-	-	-	-	12.6	438	80.0	2.3	3	11.3	428	78.2	2.3	5
31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	11.5	278	81.6	2.9	5	11.9	321	78.9	3.0	7	12.3	344	77.8	2.8	3
33	11.8	372	78.6	3.5	9	11.1	372	78.4	2.9	10	-	-	-	-	-
34	12.3	416	80.3	2.6	5	11.9	346	77.2	3.0	18	11.5	378	78.0	2.6	11
35	11.8	386	79.7	3.2	14	11.3	468	79.3	3.1	17	11.4	402	77.4	2.7	10
36	12.8	348	81.2	3.1	10	12.5	367	79.2	2.9	5	12.8	292	78.6	2.9	15
Ave.	11.7	367	79.9	2.9	480	12.0	378	77.6	2.9	480	11.0	360	78.1	3.0	480

BREAD WHEAT GRADING TABLE 2009/2010

Grade	Minimum			Maximum percentage permissible deviation (m/m)									
				A	B	C	D	E	F	G	H	I	J
	Hectolitre mass, kg	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	3	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	-

MYCOTOXIN RESULTS FOR THE 2009/2010 SEASON

Region	Class and Grade	Aflatoxin	Deoxynivalenol	Ochratoxin A
		ppb LOD < 2.0	ppm LOD < 0.25	ppb LOD < 1.0
1	B3	0	0	0
2	B2	2	0	1
3	B3	0	0	1
4	B4	0	0	0
5	B3	0	0	0
6	B1	0	0	1
7	B1	2	0	0
10	B1	0	0	0
11	B1	0	0	0
12	UT	0	0	0
14	B2	2	0	0
15	B2	0	0	0
16	B1	0	0.27	0
17	B1	0	0	0
18	B2	0	0	0
19	B2	0	0.48	0
20	B3	2	0	0
21	B4	4	0	0
22	B1	2	0	0
23	B4	0	0	0
24	B1	0	0	0
25	B2	2	0	0
26	B1	2	0	0
27	B3	0	0	0
28	B1	2	0	0
32	B2	3	0	1
33	B2	2	0.42	0
34	B1	0	0.48	1
35	B1	2	0	0
36	B1	3	0	0
Average 2009/2010 [max. value]		1.00 [4]	0.05 [0.48]	0.17 [1]
Average 2008/2009 [max. value]		1.23 [3]	0.47 [3]	0.03 [1]
Average 2007/2008 [max. value]		0.33 [5]	1.36 [2.7]	0.33 [2.8]

Please note:

All results <LOD and non detected are reported as 0.
LOD: Limit of detection, see table.

RSA WHEAT CROP QUALITY SUMMARY

RSA Crop Quality 2007/2008 and 2009/2010 Seasons

Country of origin	RSA Crop Average 2007/2008							RSA Crop Average 2009/2010						
Class and Grade bread wheat	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	64	137	131	70	24	54	480	159	138	79	30	16	58	480
WHEAT GRADING														
Protein (12% mb), %	12.48	11.42	10.59	9.58	11.66	10.99	11.03	12.84	11.50	10.62	9.64	11.29	11.51	11.68
Moisture, %	11.6	11.4	12.0	11.1	11.8	11.4	11.6	11.5	11.3	11.3	10.8	11.0	11.0	11.3
Falling number, sec	369	368	359	351	323	364	360	382	375	359	339	240	365	367
1000 Kernel mass (13% mb), g	38.9	38.7	39.1	39.7	38.1	36.4	38.7	38.7	39.5	40.4	40.2	36.6	38.1	39.2
Hlm (dirty), kg/hl	78.9	78.7	78.0	78.5	75.5	76.2	78.1	80.8	80.0	79.5	79.7	75.2	79.0	79.9
Screenings (<1,8mm), %	1.42	1.36	1.33	1.16	3.02	3.01	1.60	1.36	1.30	1.47	1.44	3.36	3.03	1.63
Gravel, stones, turf and glass, %	0.01	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Foreign matter, %	0.05	0.05	0.05	0.07	0.19	0.08	0.06	0.05	0.05	0.09	0.09	0.12	0.11	0.07
Other grain & unthreshed ears, %	0.23	0.25	0.30	0.26	0.32	0.54	0.30	0.25	0.26	0.30	0.35	0.64	0.65	0.33
Heat damaged kernels, %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
Immature kernels, %	0.12	0.11	0.06	0.06	0.14	0.16	0.10	0.07	0.05	0.04	0.03	0.01	0.06	0.05
Insect damaged kernels, %	0.24	0.17	0.15	0.16	2.08	0.75	0.33	0.19	0.26	0.29	0.27	1.10	0.52	0.30
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	0.13	0.00	0.01
Sprouted kernels, %	0.23	0.19	0.15	0.14	1.08	0.17	0.22	0.09	0.11	0.16	0.14	2.73	0.36	0.23
Total damaged kernels, %	0.59	0.47	0.36	0.35	3.30	1.08	0.65	0.36	0.43	0.50	0.44	3.96	0.96	0.60
Combined deviations, %	2.30	2.13	2.04	1.85	6.85	4.71	2.61	2.02	2.04	2.34	2.32	8.07	4.76	2.63
Field fungi, %	0.14	0.10	0.09	0.06	0.14	0.18	0.11	0.19	0.19	0.21	0.15	0.54	0.16	0.20
Storage fungi, %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.03	0.01	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 (Crotolaria sp, Datura sp..)	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Noxious seeds (Argemone mexicana..)	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	26	18	14	6	13	100	26	28	20	10	5	11	100
BÜHLER EXTRACTION, %	75.7	76.0	75.7	74.9	75.4	75.1	75.6	74.8	75.1	74.8	73.8	74.1	74.9	74.7
FLOUR														
Colour, KJ	-1.7	-1.9	-2.1	-2.4	-0.8	-1.7	-1.9	-2.2	-2.3	-2.3	-2.3	-1.7	-2.2	-2.2
100g BAKING TEST														
Baking water absorption, %	61.5	60.3	59.4	57.7	61.2	59.6	60.0	61.5	60.3	59.3	58.2	59.5	60.4	60.2
Loaf volume, cm ³	892	857	802	704	873	800	827	902	853	803	727	868	847	843
Evaluation	1	1	1	2	1	1	1	1	0	0	0	0	0	0
FARINOGRAM														
Water absorption, %	62.3	61.0	60.2	59.3	61.0	59.8	60.8	62.3	61.3	60.5	59.3	58.3	60.6	61.0
Development time, min	4.8	3.8	2.9	2.0	4.4	3.0	3.5	4.8	3.4	2.9	2.0	2.7	3.7	3.5
Stability, mm	9.0	7.6	6.6	4.5	7.9	6.4	7.2	8.4	6.8	5.7	3.8	4.9	6.9	6.6
Mixing tolerance index, BU	37	41	44	58	43	46	44	39	44	52	71	71	48	49

RSA Crop Quality of 2007/2008 and 2009/2010 Seasons

Country of origin	RSA Crop Average 2007/2008							RSA Crop Average 2009/2010						
Class and Grade bread wheat	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	23	26	18	14	6	13	100	26	28	20	10	5	11	100
ALVEOGRAM														
Strength (S) , cm ²	47.9	42.8	39.8	33.0	46.9	39.5	41.9	42.4	36.5	32.7	25.0	26.8	35.4	35.5
Stability (P), mm	92	86	89	96	83	86	89	93	90	90	87	61	83	89
Distensibility (L), mm	118	114	101	75	127	101	106	97	86	75	58	101	90	85
P/L	0.81	0.78	0.98	1.54	0.67	0.93	0.94	1.03	1.13	1.31	1.80	0.61	0.97	1.17
EXTENSOGRAM														
Strength, cm ²	106	98	93	77	114	97	97	96	85	74	61	71	87	83
Max. height, BU	377	371	384	371	392	388	378	355	344	327	304	295	345	337
Extensibility, mm	195	184	172	142	200	170	178	187	174	158	139	171	173	170
MIXOGRAM														
Peak time, min	2.6	2.6	2.9	3.0	2.8	2.8	2.8	2.6	2.6	2.7	2.8	2.8	2.5	2.6
Absorption, %	62.4	61.0	60.0	58.7	61.8	60.2	60.8	61.8	60.4	59.4	58.5	60.3	60.6	60.4
MYCOTOXINS														
Aflatoxin, ppb [max.value]	0.33 [5.00]							1.00 [4.00]						
Deoxynivalenol, ppm [max. value]	1.36 [2.70]							0.05 [0.48]						
Ochratoxin A, ppb [max. value]	0.33 [2.80]							0.17 [1.00]						
No. of samples	30							30						

RSA WHEAT CROP QUALITY SUMMARY

RSA Crop Quality 2008/2009 and 2009/2010 Seasons

Country of origin	RSA Crop Average 2008/2009							RSA Crop Average 2009/2010						
Class and Grade bread wheat	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	126	121	101	49	16	67	480	159	138	79	30	16	58	480
WHEAT														
GRADING														
Protein (12% mb), %	13.27	12.00	11.25	10.69	12.69	11.54	12.00	12.84	11.50	10.62	9.64	11.29	11.51	11.68
Moisture, %	11.5	11.1	11.0	10.9	11.6	11.0	11.2	11.5	11.3	11.3	10.8	11.0	11.0	11.3
Falling number, sec	364	395	382	346	364	393	378	382	375	359	339	240	365	367
1000 Kernel mass (13% mb), g	37.5	38.5	39.1	40.6	36.6	37.4	38.3	38.7	39.5	40.4	40.2	36.6	38.1	39.2
Hlm (dirty), kg/hl	78.6	77.8	77.2	77.4	76.0	76.4	77.6	80.8	80.0	79.5	79.7	75.2	79.0	79.9
Screenings (<1,8mm), %	1.36	1.52	1.74	1.33	2.76	2.77	1.72	1.36	1.30	1.47	1.44	3.36	3.03	1.63
Gravel, stones, turf and glass, %	0.00	0.00	0.00	0.01	0.13	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Foreign matter, %	0.09	0.09	0.08	0.10	0.29	0.17	0.11	0.05	0.05	0.09	0.09	0.12	0.11	0.07
Other grain & unthreshed ears, %	0.20	0.24	0.29	0.26	0.32	0.34	0.26	0.25	0.26	0.30	0.35	0.64	0.65	0.33
Heat damaged kernels, %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
Immature kernels, %	0.12	0.07	0.04	0.05	0.04	0.06	0.07	0.07	0.05	0.04	0.03	0.01	0.06	0.05
Insect damaged kernels, %	0.27	0.42	0.46	0.54	4.02	1.13	0.62	0.19	0.26	0.29	0.27	1.10	0.52	0.30
Heavily frost damaged kernels, %	0.00	0.00	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.01
Sprouted kernels, %	0.10	0.09	0.11	0.10	1.01	0.14	0.13	0.09	0.11	0.16	0.14	2.73	0.36	0.23
Total damaged kernels, %	0.49	0.58	0.62	0.75	5.07	1.40	0.85	0.36	0.43	0.50	0.44	3.96	0.96	0.60
Combined deviations, %	2.14	2.42	2.71	2.27	8.44	4.49	2.88	2.02	2.04	2.34	2.32	8.07	4.76	2.63
Field fungi, %	0.08	0.12	0.09	0.04	0.23	0.12	0.10	0.19	0.19	0.21	0.15	0.54	0.16	0.20
Storage fungi, %	0.01	0.01	0.01	0.00	0.04	0.01	0.01	0.01	0.01	0.01	0.00	0.03	0.01	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 sp, Datura sp..)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Noxious seeds (Argemone mexicana..)	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	22	23	22	12	5	16	100	26	28	20	10	5	11	100
BÜHLER EXTRACTION, %	76.0	76.1	75.7	75.2	75.1	75.2	75.7	74.8	75.1	74.8	73.8	74.1	74.9	74.7
FLOUR														
Colour, KJ	-1.3	-1.7	-1.7	-1.6	-0.9	-1.5	-1.5	-2.2	-2.3	-2.3	-2.3	-1.7	-2.2	-2.2
100g BAKING TEST														
Baking water absorption, %	61.9	60.8	60.0	60.0	60.1	60.3	60.7	61.5	60.3	59.3	58.2	59.5	60.4	60.2
Loaf volume, cm ³	956	909	870	849	926	892	902	902	853	803	727	868	847	843
Evaluation	1	0	0	1	0	0	0	1	0	0	0	0	0	0
FARINOGRAM														
Water absorption, %	62.2	61.1	60.4	60.9	60.6	60.7	61.1	62.3	61.3	60.5	59.3	58.3	60.6	61.0
Development time, min	5.0	4.1	3.6	3.1	3.7	3.8	4.0	4.8	3.4	2.9	2.0	2.7	3.7	3.5
Stability, mm	8.6	7.7	7.3	6.8	7.4	7.4	7.6	8.4	6.8	5.7	3.8	4.9	6.9	6.6
Mixing tolerance index, BU	42	42	44	46	43	45	43	39	44	52	71	71	48	49

RSA Crop Quality of 2008/2009 and 2009/2010 Seasons

Country of origin	RSA Crop Average 2008/2009							RSA Crop Average 2009/2010						
Class and Grade bread wheat	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	22	23	22	12	5	16	100	26	28	20	10	5	11	100
ALVEOGRAM														
Strength (S) , cm ²	42.4	38.0	35.6	35.8	36.6	37.2	38.0	42.4	36.5	32.7	25.0	26.8	35.4	35.5
Stability (P), mm	85	83	82	87	78	82	83	93	90	90	87	61	83	89
Distensibility (L), mm	111	103	95	88	114	101	101	97	86	75	58	101	90	85
P/L	0.80	0.86	0.93	1.10	0.91	0.94	0.90	1.03	1.13	1.31	1.80	0.61	0.97	1.17
EXTENSOGRAM														
Strength, cm ²	101	89	83	85	89	90	90	96	85	74	61	71	87	83
Max. height, BU	348	330	330	337	325	340	336	355	344	327	304	295	345	337
Extensibility, mm	201	184	172	174	187	179	183	187	174	158	139	171	173	170
MIXOGRAM														
Peak time, min	2.5	2.6	2.7	2.7	2.8	2.7	2.6	2.6	2.6	2.7	2.8	2.8	2.5	2.6
Absorption, %	62.3	61.0	60.6	60.6	61.4	61.1	61.2	61.8	60.4	59.4	58.5	60.3	60.6	60.4
MYCOTOXINS														
Aflatoxin, ppb [max.value]	1.23 [3.00]							1.00 [4.00]						
Deoxynivalenol, ppm [max. value]	0.47 [3.00]							0.05 [0.48]						
Ochratoxin A, ppb [max. value]	0.03 [1.00]							0.17 [1.00]						
No. of samples	30							30						

RSA WHEAT PRODUCTION AREAS



WHEAT SEED SOLD BY COMMERCIAL GRAIN SILO OWNERS TO WHEAT PRODUCERS FOR THE 2009 PLANTING SEASON

<u>Cultivar</u>	<u>%</u>	<u>Cultivar</u>	<u>%</u>
SST 835	17.76	PAN 3120	0.14
SST 027	14.16	Baviaans	0.13
SST 047	11.57	Steenbras	0.09
SST 88	9.86	PAN 3349	0.08
Duzi	9.20	PAN 3368	0.05
CRN 826	8.85	Betta DN	0.04
SST 015	7.22	SST 966	0.036
SST 843	7.09	PAN 3144	0.030
Elands	4.72	Komati	0.027
SST 356	2.90	SST 57	0.020
Kariega	1.62	SST 347	0.018
SST 876	1.48	SST 322	0.018
Krokodil	0.62	SST 399	0.016
SST 822	0.49	Olifants	0.011
Matlabas	0.43	SST 935	0.009
Tugela	0.36	SST 334	0.008
Gariiep	0.26	SST 825	0.005
PAN 3118	0.21	SST 367	0.005
PAN 3434	0.16	SST 806	0.003
PAN 3377	0.16	PAN 3364	<u>0.003</u>
PAN 3355	0.15		100

METHODS

GRADING:

Full grading was done in accordance with the Regulations relating to the grading, packing and marking of wheat intended for sale in the Republic of South Africa (No. R. 905 of 10 July 1998 as amended by Nos. R. 1421 of 6 November 1998, R. 876 of 14 September 2001 and R. 979 of 19 July 2002, R. 1210 of 29 August 2003 and Dispensations: Reference No. 21/4/1/1 and Serial No. 791 of 25 July 2003 and Reference No. 20/4/14/1 of 14 April 2009).

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 by means of the Two-level funnel method.

An amended grading regulation for wheat, in which the Two-level funnel method for the determination of hectolitre mass is replaced with any suitable instrument complying with ISO Standard 7971-3, will come into effect on 1 October 2010.

From 1 October 2009 to 30 September 2010, Dispensation Ref. No. 20/4/14/1 and dated 14 April 2009, will be applicable according to which regulation 14 (1) (g) of the current grading regulation document will be substituted by the following equation:

$$\text{Hectolitre mass} = \frac{\text{Mass (g) of wheat in a 500ml bucket} + 2\text{kg/hl}}{5}$$

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.

Screenings means all material that passes through a standard sieve. A standard sieve is a hand sieve which consists of a slotted, stainless steel sieve with a thickness of 1,0 mm, mounted in durable plastic, with apertures 1,8 mm wide and 12,7 mm long, which fits into an aluminum pan with a solid bottom, and has an inner diameter of 300 mm and an outer diameter of 302,5 mm.

Damaged kernels means wheat kernels and pieces of wheat kernels -

- (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 rootlets are clearly visible.

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.

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 the falling number hammer mill fitted with a 0,8 mm screen.

MOISTURE:

ICC Standard No. 110/1, 1976 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 AACC method 46-30.01, 1999.

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

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 alpha-amylase activity.

ICC Standard No.107/1, 1995 is used to determine the falling number. Only the altitude-corrected value is reported.

QUADROMAT 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.

MIXOGRAPH:

A 35 g mixograph is used. The amount of water added to the flour is adjusted according to the flour protein content. Industry Accepted Method 020 based on AACC method 54-40.02, 1999 is followed.

Mixogram peak time is the time measured in minutes that a 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.

BÜHLER MILLING:

Cleaned wheat samples are damped to between 15,0 % and 16,0 % moisture according to the wheat moisture and kernel hardness and allowed to stand for 20 hours. Samples are then milled on a standard 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 AACC method 26-21.02, 1999.

COLOUR:

The Kent Jones colour is determined by following

FTP Method No. 0007/3, 7/1991. This method determines the influence of the branny material present in flour by measuring reflectance with a light source in the green band of the light spectrum. The lower the Kent Jones colour, the lighter the flour.

GLUTEN:

Wheat gluten is the water-insoluble complex protein fraction separated from wheat flours. The ability of wheat flour to produce dough with good gas retaining properties is attributed to gluten.

The gluten content of wheat flour is determined by means of AACC Method 38-12.02, 2000. Wet gluten is washed from meal or flour by an automatic washing apparatus (Glutomatic). Wet gluten is a plastic elastic substance composed principally of two protein fractions. Glutenin, the higher molecular weight fraction, contributes elasticity and Gliadin, the lower molecular weight fraction, provides extensibility.

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.

FARINOGRAPH:

AACC method 54-21.01, 1999 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. The dough is subjected to a prolonged, relatively gentle mixing action at a constant temperature.

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 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 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 value is the difference, in Brabender units, 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.

EXTENSOGGRAPH:

ICC Standard No. 114/1, 1992 is followed.

The strength 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 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 is the mean length at the base of the 2 curves and indicates the stretchability of the dough.

ALVEOGRAPH:

ICC Standard No.121,1992 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.

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.

Distensibility (L): The length of the curve, measured along the base line, gives an indication of the

extensibility of the dough and also predicts the handling characteristics 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.

100 g BAKING TEST:

This procedure, according to Industry Accepted Method 022 based on AACC Method 10-10.03, 1999, 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 100g 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, produced by moulds or fungi, are natural contaminants of food and feedstuffs with serious implications for public health and economics, in particular with relation to the international food trade.

The mycotoxin analyses were carried out using ROSA (Rapid One Step Assay) Quantitative tests, which are lateral flow immuno assay tests, together with the ROSA-M reader for measuring the mycotoxin content. Thirty samples out of the 480 wheat crop samples were tested for aflatoxin, deoxynivalenol and ochratoxin A.

Fungi	Toxin	Method reference
<i>Aspergillus flavus</i>	Aflatoxin	ROSA Quantitative Method, 28 May 2008
<i>Aspergillus ochraceus</i> and several species of <i>Penicillium sp.</i>	Ochratoxin A	ROSA Quantitative Method, 10 September 2008
<i>Fusarium graminearum</i>	Deoxynivalenol (DON)	ROSA Quantitative Method, 11 February 2009

2008/2009 IMPORTED WHEAT QUALITY - ARGENTINA (1 Oct 2008 to 30 Sep 2009)

2008/2009 Imported Wheat Quality Versus 2008/2009 RSA Wheat Quality

Country of origin	Argentina							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	13	10	2	-	34	-	59	126	121	101	49	16	67	480
WHEAT														
GRADING														
Protein (12% mb), %	12.48	11.47	10.87	-	11.59	-	11.74	13.27	12.00	11.25	10.69	12.69	11.54	12.00
Moisture, %	11.0	11.5	11.9	-	11.8	-	11.6	11.5	11.1	11.0	10.9	11.6	11.0	11.2
Falling number, sec	434	446	420	-	432	-	434	364	395	382	346	364	393	378
1000 Kernel mass (13% mb), g	36.0	33.8	33.6	-	32.9	-	33.8	37.5	38.5	39.1	40.6	36.6	37.4	38.3
Hlm (dirty), kg/hl	81.2	78.2	78.0	-	78.1	-	78.8	78.6	77.8	77.2	77.4	76.0	76.4	77.6
Screenings (<1,8mm), %	1.75	2.54	2.83	-	3.68	-	3.03	1.36	1.52	1.74	1.33	2.76	2.77	1.72
Gravel, stones, turf and glass, %	0.00	0.00	0.00	-	0.00	-	0.00	0.00	0.00	0.00	0.01	0.13	0.00	0.01
Foreign matter, %	0.12	0.08	0.07	-	0.08	-	0.09	0.09	0.09	0.08	0.10	0.29	0.17	0.11
Other grain & unthreshed ears, %	0.21	0.14	0.14	-	0.14	-	0.15	0.20	0.24	0.29	0.26	0.32	0.34	0.26
Heat damaged kernels, %	0.01	0.02	0.08	-	0.06	-	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Immature kernels, %	0.03	0.05	0.09	-	0.08	-	0.07	0.12	0.07	0.04	0.05	0.04	0.06	0.07
Insect damaged kernels, %	0.04	0.19	0.20	-	0.21	-	0.17	0.27	0.42	0.46	0.54	4.02	1.13	0.62
Heavily frost damaged kernels, %	0.00	0.00	0.00	-	0.00	-	0.00	0.00	0.00	0.00	0.02	0.00	0.01	0.00
Sprouted kernels, %	0.04	0.01	0.04	-	0.06	-	0.05	0.10	0.09	0.11	0.10	1.01	0.14	0.13
Total damaged kernels, %	0.12	0.28	0.41	-	0.42	-	0.33	0.49	0.58	0.62	0.75	5.07	1.40	0.85
Combined deviations, %	2.20	3.04	3.45	-	4.32	-	3.61	2.14	2.42	2.71	2.27	8.44	4.49	2.88
Field fungi, %	0.14	0.18	0.13	-	0.21	-	0.19	0.08	0.12	0.09	0.04	0.23	0.12	0.10
Storage fungi, %	0.06	0.01	0.16	-	0.00	-	0.02	0.01	0.01	0.01	0.00	0.04	0.01	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 sp, Datura sp..)	0	0	0	-	0	-	0	0	0	0	0	0	0	0
Noxious seeds (Argemone mexicana..)	0	0	0	-	0	-	0	0	0	0	0	0	0	0
Live insects	No	No	No	-	No	-	No	No	No	No	No	No	No	No
Undesirable odour	No	No	No	-	No	-	No	No	No	No	No	No	No	No
	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	13	10	2	-	34	-	59	22	23	22	12	5	16	100
BÜHLER EXTRACTION, %	74.5	73.8	73.7	-	73.7	-	73.9	76.0	76.1	75.7	75.2	75.1	75.2	75.7
FLOUR														
Colour, KJ	-2.1	-1.0	-1.2	-	-0.9	-	-1.2	-1.3	-1.7	-1.7	-1.6	-0.9	-1.5	-1.5
100g BAKING TEST														
Baking water absorption, %	61.1	59.7	59.6	-	59.7	-	60.0	61.9	60.8	60.0	60.0	60.1	60.3	60.7
Loaf volume, cm ³	908	707	680	-	730	-	764	956	909	870	849	926	892	902
Evaluation	1	4	4	-	3	-	3	1	0	0	1	0	0	0
FARINOGRAM														
Water absorption, %	61.2	60.7	60.7	-	60.2	-	60.5	62.2	61.1	60.4	60.9	60.6	60.7	61.1
Development time, min	3.9	1.9	1.6	-	1.9	-	2.3	5.0	4.1	3.6	3.1	3.7	3.8	4.0
Stability, mm	9.2	4.7	2.6	-	5.2	-	5.9	8.6	7.7	7.3	6.8	7.4	7.4	7.6
Mixing tolerance index, BU	39	57	73	-	56	-	53	42	42	44	46	43	45	43

2008/2009 Imported Wheat Quality Versus 2008/2009 RSA Wheat Quality

Country of origin	Argentina							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	13	10	2	-	34	-	59	22	23	22	12	5	16	100
ALVEOGRAM														
Strength (S) , cm ²	45.3	38.3	31.3	-	38.0	-	39.4	42.4	38.0	35.6	35.8	36.6	37.2	38.0
Stability (P), mm	98	121	127	-	117	-	114	85	83	82	87	78	82	83
Distensibility (L), mm	94	52	38	-	54	-	62	111	102	95	88	114	101	101
P/L	1.11	2.42	3.47	-	2.32	-	2.11	0.80	0.86	0.93	1.10	0.91	0.94	0.90
EXTENSOGRAM														
Strength, cm ²	108	86	78	-	88	-	92	101	89	83	85	89	90	90
Max. height, BU	403	436	425	-	436	-	428	348	330	330	337	325	340	336
Extensibility, mm	190	138	128	-	141	-	151	201	184	172	174	187	179	183
MIXOGRAM														
Peak time, min	3.0	4.4	4.4	-	4.2	-	4.0	2.5	2.6	2.7	2.7	2.8	2.7	2.6
Absorption, %	61.6	60.2	59.6	-	60.3	-	60.5	62.3	61.0	60.6	60.6	61.4	61.1	61.2
MYCOTOXINS														
Aflatoxin, ppb [max.value]	2.68 [5.00]							1.23 [3.00]						
Deoxynivalenol, ppm [max. value]	0.52 [0.96]							0.47 [3.00]						
Ochratoxin A, ppb [max. value]	0.21 [1.00]							0.03 [1.00]						
No. of samples	19							30						

2008/2009 IMPORTED WHEAT QUALITY - AUSTRALIA (1 Oct 2008 to 30 Sep 2009)

2008/2009 Imported Wheat Quality Versus 2008/2009 RSA Wheat Quality

Country of origin	Australia							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	-	-	-	-	-	5	126	121	101	49	16	67	480
WHEAT														
GRADING														
Protein (12% mb), %	12.17	-	-	-	-	-	12.17	13.27	12.00	11.25	10.69	12.69	11.54	12.00
Moisture, %	10.9	-	-	-	-	-	10.9	11.5	11.1	11.0	10.9	11.6	11.0	11.2
Falling number, sec	487	-	-	-	-	-	487	364	395	382	346	364	393	378
1000 Kernel mass (13% mb), g	40.2	-	-	-	-	-	40.2	37.5	38.5	39.1	40.6	36.6	37.4	38.3
Hlm (dirty), kg/hl	83.9	-	-	-	-	-	83.9	78.6	77.8	77.2	77.4	76.0	76.4	77.6
Screenings (<1,8mm), %	0.77	-	-	-	-	-	0.77	1.36	1.52	1.74	1.33	2.76	2.77	1.72
Gravel, stones, turf and glass, %	0.00	-	-	-	-	-	0.00	0.00	0.00	0.00	0.01	0.13	0.00	0.01
Foreign matter, %	0.08	-	-	-	-	-	0.08	0.09	0.09	0.08	0.10	0.29	0.17	0.11
Other grain & unthreshed ears, %	0.16	-	-	-	-	-	0.16	0.20	0.24	0.29	0.26	0.32	0.34	0.26
Heat damaged kernels, %	0.00	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Immature kernels, %	0.00	-	-	-	-	-	0.00	0.12	0.07	0.04	0.05	0.04	0.06	0.07
Insect damaged kernels, %	0.00	-	-	-	-	-	0.00	0.27	0.42	0.46	0.54	4.02	1.13	0.62
Heavily frost damaged kernels, %	0.00	-	-	-	-	-	0.00	0.00	0.00	0.00	0.02	0.00	0.01	0.00
Sprouted kernels, %	0.00	-	-	-	-	-	0.00	0.10	0.09	0.11	0.10	1.01	0.14	0.13
Total damaged kernels, %	0.00	-	-	-	-	-	0.00	0.49	0.58	0.62	0.75	5.07	1.40	0.85
Combined deviations, %	1.02	-	-	-	-	-	1.02	2.14	2.42	2.71	2.27	8.44	4.49	2.88
Field fungi, %	0.22	-	-	-	-	-	0.22	0.08	0.12	0.09	0.04	0.23	0.12	0.10
Storage fungi, %	0.11	-	-	-	-	-	0.11	0.01	0.01	0.01	0.00	0.04	0.01	0.01
Ergot, %	0.00	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Noxious seeds (Crotalaria sp, Datura sp..)	0	-	-	-	-	-	0	0	0	0	0	0	0	0
Noxious seeds (Argemone mexicana..)	0	-	-	-	-	-	0	0	0	0	0	0	0	0
Live insects	No	-	-	-	-	-	No	No	No	No	No	No	No	No
Undesirable odour	No	-	-	-	-	-	No	No	No	No	No	No	No	No
	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	5	-	-	-	-	-	5	22	23	22	12	5	16	100
BÜHLER EXTRACTION, %	74.5	-	-	-	-	-	74.5	76.0	76.1	75.7	75.2	75.1	75.2	75.7
FLOUR														
Colour, KJ	-2.6	-	-	-	-	-	-2.6	-1.3	-1.7	-1.7	-1.6	-0.9	-1.5	-1.5
100g BAKING TEST														
Baking water absorption, %	61.2	-	-	-	-	-	61.2	61.9	60.8	60.0	60.0	60.1	60.3	60.7
Loaf volume, cm ³	833	-	-	-	-	-	833	956	909	870	849	926	892	902
Evaluation	2	-	-	-	-	-	2	1	0	0	1	0	0	0
FARINOGRAM														
Water absorption, %	61.9	-	-	-	-	-	61.9	62.2	61.1	60.4	60.9	60.6	60.7	61.1
Development time, min	3.9	-	-	-	-	-	3.9	5.0	4.1	3.6	3.1	3.7	3.8	4.0
Stability, mm	8.7	-	-	-	-	-	8.7	8.6	7.7	7.3	6.8	7.4	7.4	7.6
Mixing tolerance index, BU	36	-	-	-	-	-	36	42	42	44	46	43	45	43

2008/2009 Imported Wheat Quality Versus 2008/2009 RSA Wheat Quality

Country of origin	Australia							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	-	-	-	-	-	5	22	23	22	12	5	16	100
ALVEOGRAM														
Strength (S) , cm ²	49.5	-	-	-	-	-	49.5	42.4	38.0	35.6	35.8	36.6	37.2	38.0
Stability (P), mm	112	-	-	-	-	-	112	85	83	82	87	78	82	83
Distensibility (L), mm	89	-	-	-	-	-	89	111	102	95	88	114	101	101
P/L	1.26	-	-	-	-	-	1.26	0.80	0.86	0.93	1.10	0.91	0.94	0.90
EXTENSOGRAM														
Strength, cm ²	124	-	-	-	-	-	124	101	89	83	85	89	90	90
Max. height, BU	444	-	-	-	-	-	444	348	330	330	337	325	340	336
Extensibility, mm	193	-	-	-	-	-	193	201	184	172	174	187	179	183
MIXOGRAM														
Peak time, min	2.8	-	-	-	-	-	2.8	2.5	2.6	2.7	2.7	2.8	2.7	2.6
Absorption, %	61.2	-	-	-	-	-	61.2	62.3	61.0	60.6	60.6	61.4	61.1	61.2
MYCOTOXINS														
Aflatoxin, ppb [max.value]	<2 [<2]							1.23 [3.00]						
Deoxynivalenol, ppm [max. value]	0.00 [0.00]							0.47 [3.00]						
Ochratoxin A, ppb [max. value]	0.00 [0.00]							0.03 [1.00]						
No. of samples	1							30						

2008/2009 IMPORTED WHEAT QUALITY - BRAZIL (1 Oct 2008 to 30 Sep 2009)

2008/2009 Imported Wheat Quality Versus 2008/2009 RSA Wheat Quality

Country of origin	Brazil							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	-	4	126	121	101	49	16	67	480
WHEAT														
GRADING														
Protein (12% mb), %	-	-	-	-	12.54	-	12.54	13.27	12.00	11.25	10.69	12.69	11.54	12.00
Moisture, %	-	-	-	-	12.3	-	12.3	11.5	11.1	11.0	10.9	11.6	11.0	11.2
Falling number, sec	-	-	-	-	306	-	306	364	395	382	346	364	393	378
1000 Kernel mass (13% mb), g	-	-	-	-	28.8	-	28.8	37.5	38.5	39.1	40.6	36.6	37.4	38.3
Hlm (dirty), kg/hl	-	-	-	-	77.6	-	77.6	78.6	77.8	77.2	77.4	76.0	76.4	77.6
Screenings (<1,8mm), %	-	-	-	-	4.44	-	4.44	1.36	1.52	1.74	1.33	2.76	2.77	1.72
Gravel, stones, turf and glass, %	-	-	-	-	0.00	-	0.00	0.00	0.00	0.00	0.01	0.13	0.00	0.01
Foreign matter, %	-	-	-	-	0.21	-	0.21	0.09	0.09	0.08	0.10	0.29	0.17	0.11
Other grain & unthreshed ears, %	-	-	-	-	0.13	-	0.13	0.20	0.24	0.29	0.26	0.32	0.34	0.26
Heat damaged kernels, %	-	-	-	-	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Immature kernels, %	-	-	-	-	0.12	-	0.12	0.12	0.07	0.04	0.05	0.04	0.06	0.07
Insect damaged kernels, %	-	-	-	-	0.15	-	0.15	0.27	0.42	0.46	0.54	4.02	1.13	0.62
Heavily frost damaged kernels, %	-	-	-	-	0.02	-	0.02	0.00	0.00	0.00	0.02	0.00	0.01	0.00
Sprouted kernels, %	-	-	-	-	0.99	-	0.99	0.10	0.09	0.11	0.10	1.01	0.14	0.13
Total damaged kernels, %	-	-	-	-	1.25	-	1.25	0.49	0.58	0.62	0.75	5.07	1.40	0.85
Combined deviations, %	-	-	-	-	6.03	-	6.03	2.14	2.42	2.71	2.27	8.44	4.49	2.88
Field fungi, %	-	-	-	-	0.81	-	0.81	0.08	0.12	0.09	0.04	0.23	0.12	0.10
Storage fungi, %	-	-	-	-	0.00	-	0.00	0.01	0.01	0.01	0.00	0.04	0.01	0.01
Ergot, %	-	-	-	-	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Noxious seeds (Crotalaria sp, Datura sp..)	-	-	-	-	0	-	0	0	0	0	0	0	0	0
Noxious seeds (Argemone mexicana..)	-	-	-	-	0	-	0	0	0	0	0	0	0	0
Live insects	-	-	-	-	No	-	No	No	No	No	No	No	No	No
Undesirable odour	-	-	-	-	No	-	No	No	No	No	No	No	No	No
	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	-	-	-	-	4	-	4	22	23	22	12	5	16	100
BÜHLER EXTRACTION, %	-	-	-	-	70.2	-	70.2	76.0	76.1	75.7	75.2	75.1	75.2	75.7
FLOUR														
Colour, KJ	-	-	-	-	0.4	-	0.4	-1.3	-1.7	-1.7	-1.6	-0.9	-1.5	-1.5
100g BAKING TEST														
Baking water absorption, %	-	-	-	-	60.1	-	60.1	61.9	60.8	60.0	60.0	60.1	60.3	60.7
Loaf volume, cm ³	-	-	-	-	785	-	785	956	909	870	849	926	892	902
Evaluation	-	-	-	-	3	-	3	1	0	0	1	0	0	0
FARINOGRAM														
Water absorption, %	-	-	-	-	63.2	-	63.2	62.2	61.1	60.4	60.9	60.6	60.7	61.1
Development time, min	-	-	-	-	2.3	-	2.3	5.0	4.1	3.6	3.1	3.7	3.8	4.0
Stability, mm	-	-	-	-	4.6	-	4.6	8.6	7.7	7.3	6.8	7.4	7.4	7.6
Mixing tolerance index, BU	-	-	-	-	55	-	55	42	42	44	46	43	45	43

2008/2009 Imported Wheat Quality Versus 2008/2009 RSA Wheat Quality

Country of origin	Brazil							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	-	4	22	23	22	12	5	16	100
ALVEOGRAM														
Strength (S) , cm ²	-	-	-	-	30.5	-	30.5	42.4	38.0	35.6	35.8	36.6	37.2	38.0
Stability (P), mm	-	-	-	-	109	-	109	85	83	82	87	78	82	83
Distensibility (L), mm	-	-	-	-	52	-	52	111	102	95	88	114	101	101
P/L	-	-	-	-	2.09	-	2.09	0.80	0.86	0.93	1.10	0.91	0.94	0.90
EXTENSOGRAM														
Strength, cm ²	-	-	-	-	59	-	59	101	89	83	85	89	90	90
Max. height, BU	-	-	-	-	269	-	269	348	330	330	337	325	340	336
Extensibility, mm	-	-	-	-	150	-	150	201	184	172	174	187	179	183
MIXOGRAM														
Peak time, min	-	-	-	-	2.8	-	2.8	2.5	2.6	2.7	2.7	2.8	2.7	2.6
Absorption, %	-	-	-	-	61.1	-	61.1	62.3	61.0	60.6	60.6	61.4	61.1	61.2
MYCOTOXINS														
Aflatoxin, ppb [max. value]	3.00 [3.00]							1.23 [3.00]						
Deoxynivalenol, ppm [max. value]	0.50 [0.50]							0.47 [3.00]						
Ochratoxin A, ppb [max. value]	0.00 [0.00]							0.03 [1.00]						
No. of samples	1							30						

2008/2009 IMPORTED WHEAT QUALITY - CANADA (1 Oct 2008 to 30 Sep 2009)

2008/2009 Imported Wheat Quality Versus 2008/2009 RSA Season

Country of origin	Canada							RSA Crop Average						
	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
Class and Grade bread wheat														
No. of samples	-	-	-	-	10	-	10	126	121	101	49	16	67	480
WHEAT														
GRADING														
Protein (12% mb), %	-	-	-	-	14.20	-	14.20	13.27	12.00	11.25	10.69	12.69	11.54	12.00
Moisture, %	-	-	-	-	13.0	-	13.0	11.5	11.1	11.0	10.9	11.6	11.0	11.2
Falling number, sec	-	-	-	-	349	-	349	364	395	382	346	364	393	378
1000 Kernel mass (13% mb), g	-	-	-	-	31.4	-	31.4	37.5	38.5	39.1	40.6	36.6	37.4	38.3
Hlm (dirty), kg/hl	-	-	-	-	79.0	-	79.0	78.6	77.8	77.2	77.4	76.0	76.4	77.6
Screenings (<1,8mm), %	-	-	-	-	3.87	-	3.87	1.36	1.52	1.74	1.33	2.76	2.77	1.72
Gravel, stones, turf and glass, %	-	-	-	-	0.00	-	0.00	0.00	0.00	0.00	0.01	0.13	0.00	0.01
Foreign matter, %	-	-	-	-	0.05	-	0.05	0.09	0.09	0.08	0.10	0.29	0.17	0.11
Other grain & unthreshed ears, %	-	-	-	-	0.22	-	0.22	0.20	0.24	0.29	0.26	0.32	0.34	0.26
Heat damaged kernels, %	-	-	-	-	0.02	-	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Immature kernels, %	-	-	-	-	0.06	-	0.06	0.12	0.07	0.04	0.05	0.04	0.06	0.07
Insect damaged kernels, %	-	-	-	-	0.06	-	0.06	0.27	0.42	0.46	0.54	4.02	1.13	0.62
Heavily frost damaged kernels, %	-	-	-	-	0.03	-	0.03	0.00	0.00	0.00	0.02	0.00	0.01	0.00
Sprouted kernels, %	-	-	-	-	0.38	-	0.38	0.10	0.09	0.11	0.10	1.01	0.14	0.13
Total damaged kernels, %	-	-	-	-	0.51	-	0.51	0.49	0.58	0.62	0.75	5.07	1.40	0.85
Combined deviations, %	-	-	-	-	4.65	-	4.65	2.14	2.42	2.71	2.27	8.44	4.49	2.88
Field fungi, %	-	-	-	-	0.03	-	0.03	0.08	0.12	0.09	0.04	0.23	0.12	0.10
Storage fungi, %	-	-	-	-	0.04	-	0.04	0.01	0.01	0.01	0.00	0.04	0.01	0.01
Ergot, %	-	-	-	-	0.01	-	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Noxious seeds (Crotalaria sp, Datura sp..)	-	-	-	-	0	-	0	0	0	0	0	0	0	0
Noxious seeds (Argemone mexicana..)	-	-	-	-	0	-	0	0	0	0	0	0	0	0
Live insects	-	-	-	-	No	-	No	No	No	No	No	No	No	No
Undesirable odour	-	-	-	-	No	-	No	No	No	No	No	No	No	No
	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	-	-	-	-	10	-	10	22	23	22	12	5	16	100
BÜHLER EXTRACTION, %	-	-	-	-	74.6	-	74.6	76.0	76.1	75.7	75.2	75.1	75.2	75.7
FLOUR														
Colour, KJ	-	-	-	-	-1.8	-	-1.8	-1.3	-1.7	-1.7	-1.6	-0.9	-1.5	-1.5
100g BAKING TEST														
Baking water absorption, %	-	-	-	-	63.1	-	63.1	61.9	60.8	60.0	60.0	60.1	60.3	60.7
Loaf volume, cm ³	-	-	-	-	956	-	956	956	909	870	849	926	892	902
Evaluation	-	-	-	-	2	-	2	1	0	0	1	0	0	0
FARINOGRAM														
Water absorption, %	-	-	-	-	62.3	-	62.3	62.2	61.1	60.4	60.9	60.6	60.7	61.1
Development time, min	-	-	-	-	5.5	-	5.5	5.0	4.1	3.6	3.1	3.7	3.8	4.0
Stability, mm	-	-	-	-	11.4	-	11.4	8.6	7.7	7.3	6.8	7.4	7.4	7.6
Mixing tolerance index, BU	-	-	-	-	29	-	29	42	42	44	46	43	45	43

2008/2009 Imported Wheat Quality Versus 2008/2009 RSA Wheat Quality

Country of origin	Canada							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	-	-	-	-	10	-	10	22	23	22	12	5	16	100
ALVEOGRAM														
Strength (S) , cm ²	-	-	-	-	51.2	-	51.2	42.4	38.0	35.6	35.8	36.6	37.2	38.0
Stability (P), mm	-	-	-	-	99	-	99	85	83	82	87	78	82	83
Distensibility (L), mm	-	-	-	-	100	-	100	111	102	95	88	114	101	101
P/L	-	-	-	-	1.01	-	1.01	0.80	0.86	0.93	1.10	0.91	0.94	0.90
EXTENSOGRAM														
Strength, cm ²	-	-	-	-	119	-	119	101	89	83	85	89	90	90
Max. height, BU	-	-	-	-	391	-	391	348	330	330	337	325	340	336
Extensibility, mm	-	-	-	-	209	-	209	201	184	172	174	187	179	183
MIXOGRAM														
Peak time, min	-	-	-	-	3.2	-	3.2	2.5	2.6	2.7	2.7	2.8	2.7	2.6
Absorption, %	-	-	-	-	63.9	-	63.9	62.3	61.0	60.6	60.6	61.4	61.1	61.2
MYCOTOXINS														
Aflatoxin, ppb [max.value]	2.50 [3.00]							1.23 [3.00]						
Deoxynivalenol, ppm [max. value]	0.00 [<0.25]							0.47 [3.00]						
Ochratoxin A, ppb [max. value]	0.00 [0.00]							0.03 [1.00]						
No. of samples	2							30						

2008/2009 IMPORTED WHEAT QUALITY - GERMANY (1 Oct 2008 to 30 Sep 2009)

2008/2009 Imported Wheat Quality Versus 2008/2009 RSA Season

Country of origin	Germany							RSA Crop Average						
	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
Class and Grade bread wheat														
No. of samples	-	13	10	1	-	-	24	126	121	101	49	16	67	480
WHEAT														
GRADING														
Protein (12% mb), %	-	11.21	10.60	11.02	-	-	10.95	13.27	12.00	11.25	10.69	12.69	11.54	12.00
Moisture, %	-	12.7	12.6	12.3	-	-	12.6	11.5	11.1	11.0	10.9	11.6	11.0	11.2
Falling number, sec	-	335	330	210	-	-	328	364	395	382	346	364	393	378
1000 Kernel mass (13% mb), g	-	44.1	43.6	44.2	-	-	43.9	37.5	38.5	39.1	40.6	36.6	37.4	38.3
Hlm (dirty), kg/hl	-	81.2	81.1	81.8	-	-	81.2	78.6	77.8	77.2	77.4	76.0	76.4	77.6
Screenings (<1,8mm), %	-	1.27	2.11	1.75	-	-	1.64	1.36	1.52	1.74	1.33	2.76	2.77	1.72
Gravel, stones, turf and glass, %	-	0.00	0.00	0.00	-	-	0.00	0.00	0.00	0.00	0.01	0.13	0.00	0.01
Foreign matter, %	-	0.04	0.03	0.04	-	-	0.03	0.09	0.09	0.08	0.10	0.29	0.17	0.11
Other grain & unthreshed ears, %	-	0.36	0.27	0.22	-	-	0.31	0.20	0.24	0.29	0.26	0.32	0.34	0.26
Heat damaged kernels, %	-	0.00	0.02	0.00	-	-	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Immature kernels, %	-	0.03	0.00	0.00	-	-	0.01	0.12	0.07	0.04	0.05	0.04	0.06	0.07
Insect damaged kernels, %	-	0.08	0.03	0.00	-	-	0.06	0.27	0.42	0.46	0.54	4.02	1.13	0.62
Heavily frost damaged kernels, %	-	0.10	0.14	0.24	-	-	0.12	0.00	0.00	0.00	0.02	0.00	0.01	0.00
Sprouted kernels, %	-	0.08	0.03	0.00	-	-	0.06	0.10	0.09	0.11	0.10	1.01	0.14	0.13
Total damaged kernels, %	-	0.18	0.08	0.00	-	-	0.13	0.49	0.58	0.62	0.75	5.07	1.40	0.85
Combined deviations, %	-	1.85	2.49	2.01	-	-	2.12	2.14	2.42	2.71	2.27	8.44	4.49	2.88
Field fungi, %	-	0.09	0.04	0.00	-	-	0.06	0.08	0.12	0.09	0.04	0.23	0.12	0.10
Storage fungi, %	-	0.02	0.00	0.00	-	-	0.01	0.01	0.01	0.01	0.00	0.04	0.01	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 sp, Datura sp..)	-	0	0	0	-	-	0	0	0	0	0	0	0	0
Noxious seeds (Argemone mexicana..)	-	0	0	0	-	-	0	0	0	0	0	0	0	0
Live insects	-	No	No	No	-	-	No	No	No	No	No	No	No	No
Undesirable odour	-	No	No	No	-	-	No	No	No	No	No	No	No	No
	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	-	13	10	1	-	-	24	22	23	22	12	5	16	100
BÜHLER EXTRACTION, %	-	75.6	75.5	75.5	-	-	75.5	76.0	76.1	75.7	75.2	75.1	75.2	75.7
FLOUR														
Colour, KJ	-	-1.3	-1.4	-1.0	-	-	-1.3	-1.3	-1.7	-1.7	-1.6	-0.9	-1.5	-1.5
100g BAKING TEST														
Baking water absorption, %	-	59.8	58.7	59.6	-	-	59.4	61.9	60.8	60.0	60.0	60.1	60.3	60.7
Loaf volume, cm ³	-	729	702	665	-	-	715	956	909	870	849	926	892	902
Evaluation	-	3	2	5	-	-	3	1	0	0	1	0	0	0
FARINOGRAM														
Water absorption, %	-	60.5	60.4	60.8	-	-	60.5	62.2	61.1	60.4	60.9	60.6	60.7	61.1
Development time, min	-	1.9	1.7	1.9	-	-	1.8	5.0	4.1	3.6	3.1	3.7	3.8	4.0
Stability, mm	-	4.0	3.1	3.8	-	-	3.7	8.6	7.7	7.3	6.8	7.4	7.4	7.6
Mixing tolerance index, BU	-	61	72	60	-	-	65	42	42	44	46	43	45	43

2008/2009 Imported Wheat Quality Versus 2008/2009 RSA Wheat Quality

Country of origin	Germany							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	-	13	10	1	-	-	24	22	23	22	12	5	16	100
ALVEOGRAM														
Strength (S) , cm ²	-	33.3	30.1	41.5	-	-	32.4	42.4	38.0	35.6	35.8	36.6	37.2	38.0
Stability (P), mm	-	106	109	108	-	-	107	85	83	82	87	78	82	83
Distensibility (L), mm	-	54	47	50	-	-	51	111	102	95	88	114	101	101
P/L	-	1.96	2.27	2.15	-	-	2.09	0.80	0.86	0.93	1.10	0.91	0.94	0.90
EXTENSOGRAM														
Strength, cm ²	-	83	78	75	-	-	81	101	89	83	85	89	90	90
Max. height, BU	-	380	363	350	-	-	372	348	330	330	337	325	340	336
Extensibility, mm	-	148	146	146	-	-	147	201	184	172	174	187	179	183
MIXOGRAM														
Peak time, min	-	3.4	3.4	3.7	-	-	3.4	2.5	2.6	2.7	2.7	2.8	2.7	2.6
Absorption, %	-	59.8	59.3	59.6	-	-	59.6	62.3	61.0	60.6	60.6	61.4	61.1	61.2
MYCOTOXINS														
Aflatoxin, ppb [max.value]	1.45 [4.00]							1.23 [3.00]						
Deoxynivalenol, ppm [max. value]	0.00 [<0.25]							0.47 [3.00]						
Ochratoxin A, ppb [max. value]	0.64 [4.00]							0.03 [1.00]						
No. of samples	11							30						

2008/2009 IMPORTED WHEAT QUALITY - USA (1 Oct 2008 to 30 Sep 2009)

2008/2009 Imported Wheat Quality Versus 2008/2009 RSA Season

Country of origin	USA							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	-	5	1	-	9	126	121	101	49	16	67	480
WHEAT														
GRADING														
Protein (12% mb), %	12.17	11.86	-	9.68	11.44	-	10.64	13.27	12.00	11.25	10.69	12.69	11.54	12.00
Moisture, %	11.5	11.2	-	12.2	11.3	-	11.8	11.5	11.1	11.0	10.9	11.6	11.0	11.2
Falling number, sec	503	478	-	414	364	-	432	364	395	382	346	364	393	378
1000 Kernel mass (13% mb), g	32.1	29.3	-	35.5	29.8	-	33.1	37.5	38.5	39.1	40.6	36.6	37.4	38.3
Hlm (dirty), kg/hl	78.2	77.7	-	78.5	78.0	-	78.2	78.6	77.8	77.2	77.4	76.0	76.4	77.6
Screenings (<1.8mm), %	2.37	2.85	-	1.26	3.12	-	1.94	1.36	1.52	1.74	1.33	2.76	2.77	1.72
Gravel, stones, turf and glass, %	0.00	0.00	-	0.00	0.00	-	0.00	0.00	0.00	0.00	0.01	0.13	0.00	0.01
Foreign matter, %	0.04	0.06	-	0.07	0.08	-	0.06	0.09	0.09	0.08	0.10	0.29	0.17	0.11
Other grain & unthreshed ears, %	0.08	0.17	-	0.12	0.14	-	0.13	0.20	0.24	0.29	0.26	0.32	0.34	0.26
Heat damaged kernels, %	0.00	0.00	-	0.03	0.08	-	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Immature kernels, %	0.00	0.03	-	0.00	0.00	-	0.01	0.12	0.07	0.04	0.05	0.04	0.06	0.07
Insect damaged kernels, %	0.00	0.06	-	0.00	0.08	-	0.02	0.27	0.42	0.46	0.54	4.02	1.13	0.62
Heavily frost damaged kernels, %	0.00	0.00	-	0.00	0.00	-	0.00	0.00	0.00	0.00	0.02	0.00	0.01	0.00
Sprouted kernels, %	0.08	0.20	-	0.08	0.32	-	0.13	0.10	0.09	0.11	0.10	1.01	0.14	0.13
Total damaged kernels, %	0.08	0.29	-	0.11	0.48	-	0.19	0.49	0.58	0.62	0.75	5.07	1.40	0.85
Combined deviations, %	2.57	3.37	-	1.56	3.82	-	2.32	2.14	2.42	2.71	2.27	8.44	4.49	2.88
Field fungi, %	0.00	0.04	-	0.41	0.00	-	0.24	0.08	0.12	0.09	0.04	0.23	0.12	0.10
Storage fungi, %	0.00	0.00	-	0.02	0.00	-	0.01	0.01	0.01	0.01	0.00	0.04	0.01	0.01
Ergot, %	0.02	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 sp, Datura sp..)	0	0	-	0	0	-	0	0	0	0	0	0	0	0
Noxious seeds (Argemone mexicana..)	0	0	-	0	0	-	0	0	0	0	0	0	0	0
Live insects	No	No	-	No	No	-	No	No	No	No	No	No	No	No
Undesirable odour	No	No	-	No	No	-	No	No	No	No	No	No	No	No
	B1	B2	B3	B4	UT	COW	Average	B1	B2	B3	B4	UT	COW	Average
No. of samples	1	2	-	5	1	-	9	22	23	22	12	5	16	100
BÜHLER EXTRACTION, %	73.5	73.1	-	73.0	73.2	-	73.1	76.0	76.1	75.7	75.2	75.1	75.2	75.7
FLOUR														
Colour, KJ	-1.2	-1.1	-	-1.5	-1.0	-	-1.3	-1.3	-1.7	-1.7	-1.6	-0.9	-1.5	-1.5
100g BAKING TEST														
Baking water absorption, %	61.0	59.1	-	52.1	60.3	-	55.6	61.9	60.8	60.0	60.0	60.1	60.3	60.7
Loaf volume, cm ³	810	818	-	659	820	-	729	956	909	870	849	926	892	902
Evaluation	2	1	-	1	0	-	1	1	0	0	1	0	0	0
FARINOGRAM														
Water absorption, %	57.1	57.7	-	53.3	57.7	-	55.2	62.2	61.1	60.4	60.9	60.6	60.7	61.1
Development time, min	2.2	2.0	-	1.4	1.9	-	1.7	5.0	4.1	3.6	3.1	3.7	3.8	4.0
Stability, mm	12.3	6.0	-	2.1	6.1	-	4.5	8.6	7.7	7.3	6.8	7.4	7.4	7.6
Mixing tolerance index, BU	14	53	-	92	45	-	69	42	42	44	46	43	45	43

2008/2009 Imported Wheat Quality Versus 2008/2009 RSA Wheat Quality

Country of origin	USA							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	-	5	1	-	9	22	23	22	12	5	16	100
ALVEOGRAM														
Strength (S) , cm ²	39.9	41.4	-	14.9	37.8	-	26.1	42.4	38.0	35.6	35.8	36.6	37.2	38.0
Stability (P), mm	87	93	-	52	95	-	70	85	83	82	87	78	82	83
Distensibility (L), mm	80	78	-	53	67	-	63	111	102	95	88	114	101	101
P/L	1.09	1.19	-	0.98	1.42	-	1.09	0.80	0.86	0.93	1.10	0.91	0.94	0.90
EXTENSOGRAM														
Strength, cm ²	121	103	-	48	104	-	74	101	89	83	85	89	90	90
Max. height, BU	515	473	-	288	485	-	376	348	330	330	337	325	340	336
Extensibility, mm	160	151	-	116	149	-	132	201	184	172	174	187	179	183
MIXOGRAM														
Peak time, min	4.4	4.3	-	3.8	4.2	-	4.0	2.5	2.6	2.7	2.7	2.8	2.7	2.6
Absorption, %	61.0	60.6	-	58.1	60.3	-	59.2	62.3	61.0	60.6	60.6	61.4	61.1	61.2
MYCOTOXINS														
Aflatoxin, ppb [max. value]	3.67 [5.00]							1.23 [3.00]						
Deoxynivalenol, ppm [max. value]	0.34 [0.65]							0.47 [3.00]						
Ochratoxin A, ppb [max. value]	0.00 [0.00]							0.03 [1.00]						
No. of samples	3							30						

