SOUTH AFRICAN

Wheat Crop Quality Report 2004/2005 Season

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SOUTH AFRICAN
COMMERCIAL WHEAT QUALITY 2004/2005 CROP

Acknowledgements

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Introduction

The wheat production during 2004/2005 (1 699 280 tons) was 10 % better than the previous season (1 540 000 tons), but 17 % lower than the 5-year average of 2 040 213 tons (1999/2000 to 2003/2004).

The Free State province produced 525 000 tons and the Western Cape province followed with 516 200 tons. (Final estimation of the Crop Estimates Committee, CEC). These two provinces accounted for 61 % of the total wheat produced.

The average yield in the Free State province (summer rainfall area) as well as in the Western Cape (winter rainfall area) was 1.5 tons per hectare. The summer rainfall areas (dry land cultivation) in the Eastern Cape gave on average 3.4 tons per hectare, Mpumalanga gave on average 5.5 tons per hectare and Gauteng gave on average 5.6 tons per hectare. The irrigation areas gave on average a yield of 5.5 tons per hectare.

This production is not enough for inland requirements, and South Africa has to import wheat to meet domestic consumption of approximately 2.7 million tons this year.

South Africa has three major wheat-breeding programmes and one company in South Africa that plants introduction cultivars from other countries. The wheat industry has set up a release criteria document with stringent quality evaluation norms. The South African breeders can only release a new cultivar or an introduction cultivar if it has better agronomical as well as better quality characteristics than the cultivars planted most commercially in that area. The producers continuously try to better the wheat that can be grown commercially in a specific area. Grading standards are also set high to ensure adequate quality control.

The Southern African Grain Laboratory (SAGL), who receives samples from all the production areas, determines the quality of the annual wheat crop. The results are then published in this report and are also made available on www.sagl.co.za.

The SAGL has ISO 17025 accreditation and is used as the reference laboratory for grain quality analyses in Southern Africa.

Samples representing the production of each region are fully graded and thousand kernel mass is done. Small samples are milled on the quadromat mill, after which a mixogram analysis is done.

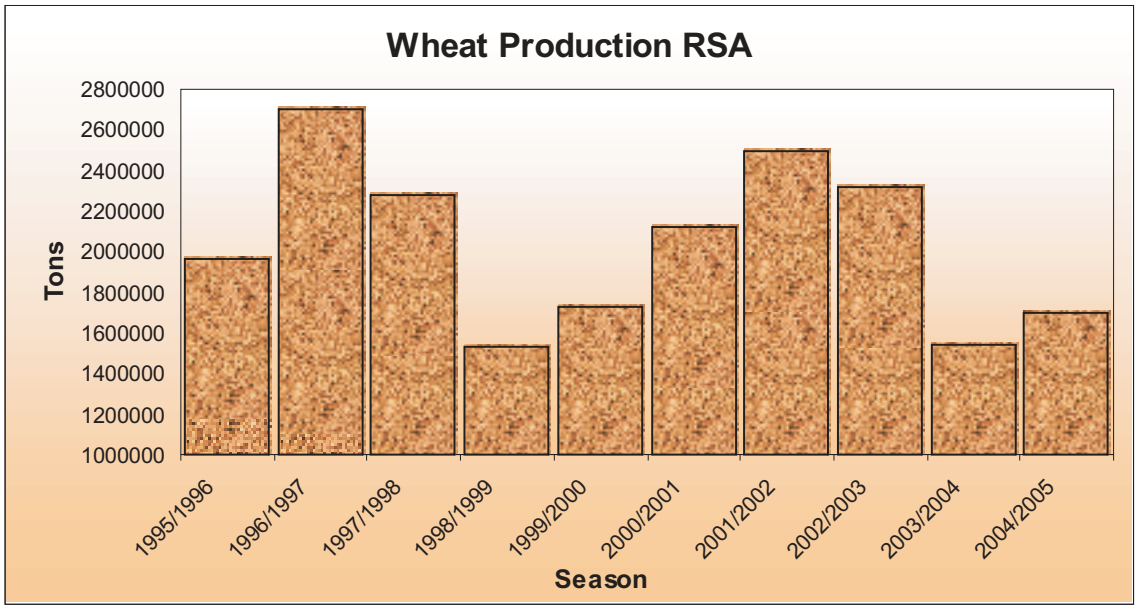
Cultivar identification is done on these samples and figures of seed sold by the commercial grain silo owners are gathered.

Composite samples are made up per grade per production region and milled on the Bühler mill. A mixogram, farinogram, alveogram, extensogram and 100-gram baking test are then performed.

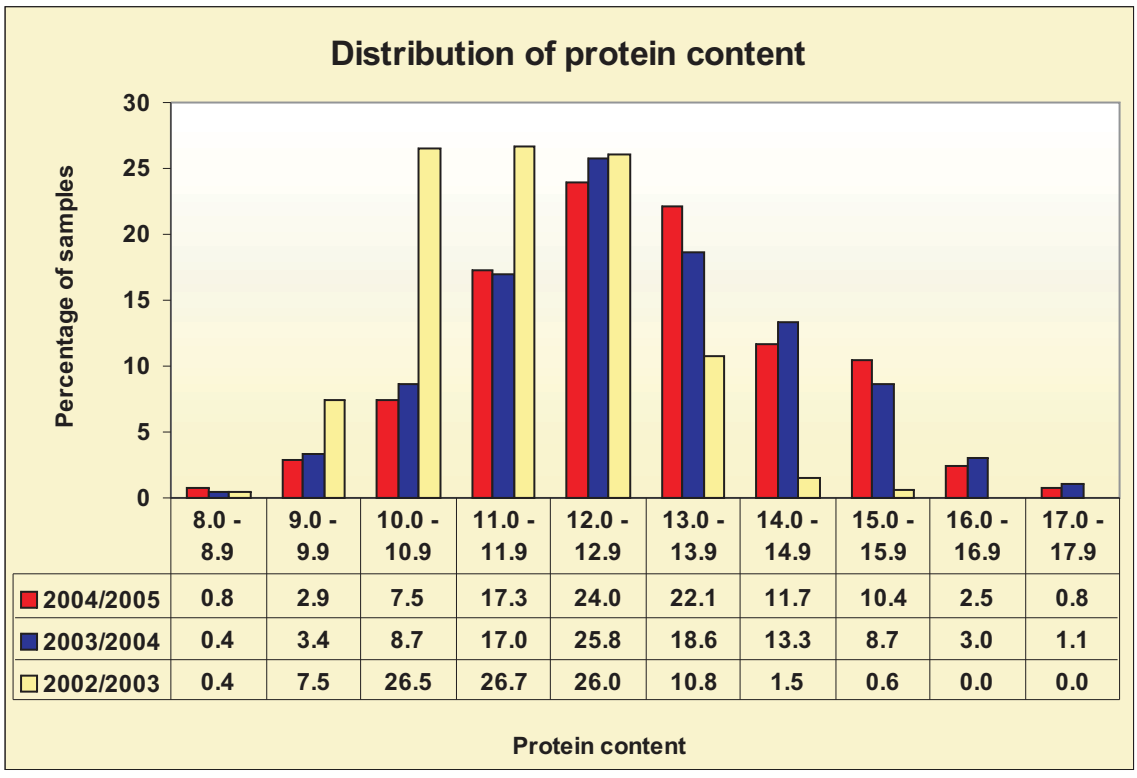
Quality of imported wheat (2003/2004)

At the request of the wheat industry, the SAGL is also monitoring the quality of all wheat imported to South Africa through South African harbours. The same analyses done on the local crop are done on the imported wheat. The last ten pages of this report give summaries of imported wheat from specific countries during the 2003/2004 delivery season compared with a summary of the local crop quality of the 2003/2004 season.

WHEAT PRODUCTION IN THE RSA OVER THE LAST 10 SEASONS



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



	8.0 - 8.9	9.0 - 9.9	10.0 - 10.9	11.0 - 11.9	12.0 - 12.9	13.0 - 13.9	14.0 - 14.9	15.0 - 15.9	16.0 - 16.9	17.0 - 17.9
2004/2005	0.8	2.9	7.5	17.3	24.0	22.1	11.7	10.4	2.5	0.8
2003/2004	0.4	3.4	8.7	17.0	25.8	18.6	13.3	8.7	3.0	1.1
2002/2003	0.4	7.5	26.5	26.7	26.0	10.8	1.5	0.6	0.0	0.0

Crop quality for 2004/2005

The Swartland area in the Western Cape and the Free State province again experienced drought during 2004/2005. The crop was of average good quality, with high protein samples from the Swartland and Free State province, but with an average hectolitre mass of about 0.5 kg/hl lower than the five-year average.

The protein distribution of all the wheat produced was normal, with an average protein content of 13.0 % (12 % moisture basis), which is about the same as the previous season's 12.9 %. Drought was also experienced in the previous season. The five-year protein average was 12.0 % (1999/2000 to 2003/2004).

The average hectolitre mass was 77.7 kg/hl, which is a little lower than the five-year average of 78.2 kg/hl. The lower hectolitre mass can be contributed to the drought conditions. This crop had a thousand kernel mass of 35.1 g, which is a little better than the previous season's 33.5 g.

The average screenings (1.8 mm sieve) were 1.85 % (2.01 % last season).

The average falling number was 377 seconds. Three of the 480 samples tested, one from the eastern Free State and two from the Ruêns area, had falling numbers below 250 seconds.

The mixogram peak time (Quadromat) averaged 2.9 minutes and the mixogram peak time (Bühler) averaged 2.7 minutes.

The average Bühler extraction was 74.5 %, with an average Kent Jones colour of -1.3 KJ units.

The farinogram had an average water absorption of 61.0 % and an average development time of 5.2 minutes. The average alveogram strength was 40.0 cm^2 and the average P/L value was 0.62. The average extensogram strength was 116 cm^2.

Quality of imported wheat for 2003/2004 season

During the 2003/2004 delivery season, 1 039 786 tons of wheat were imported. The biggest import was from the United States, namely 413 429 tons, followed by 298 504 tons from Australia and 268 218 tons from Argentina. Smaller quantities were imported from France (25 016 tons), the United Kingdom (22 420 tons) and Germany (12 199 tons). (Figures obtained from SAGIS web site.)

No samples for analyses were received of the wheat from France.

The results are summarized at the end of this report per country of origin and can be compared directly with the South African wheat crop quality of the 2003/2004 season.

Wheat grades

Representative samples (480) of the crop graded as follows: 39 % were graded B1, 23 % were graded B2, 16 % were graded B3, 4 % were graded B4 and UT and COW made up 18 %.

In the winter rainfall area and the Free State the percentage B1 was 42 % and 45 % respectively. The irrigation areas and other summer rainfall areas produced 32 % and 30 % grade B1 wheat.

Cultivars

In the winter rainfall area, two cultivars dominated the market. These two cultivars were SST 88 and SST 57. The Western Cape produces about 30 % of all wheat grown in South Africa.

Four cultivars dominated the market in the Free State. These cultivars were Elands, PAN 3377, SST 806 and SST 876. Gariep was also planted but in lesser quantities.

The cultivars SST 806 and SST 876 dominated the market in the North West province. A smaller amount of SST 966 and PAN 3377 was planted in the south-eastern region of North West.

In Limpopo, Gauteng, Mpumalanga and KwaZulu-Natal SST 806 and SST 876 were mainly planted. Elands was planted in the south-eastern Mpumalanga.

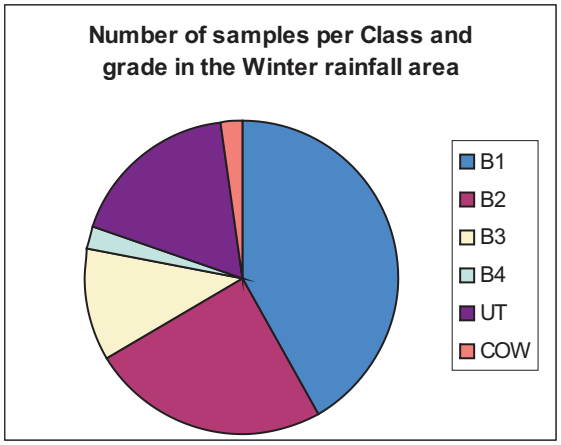
Mycotoxins

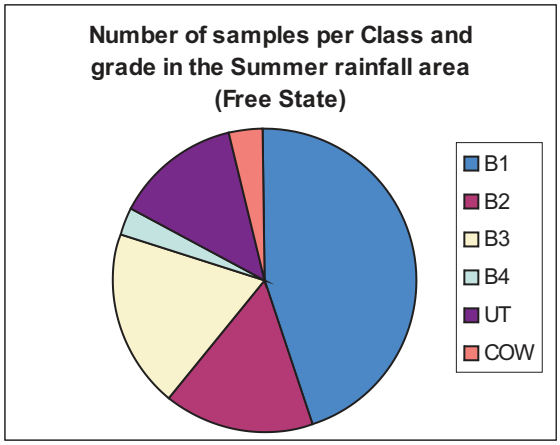
Mycotoxins, as secondary metabolites of moulds or fungi, can cause toxic effects on humans and animals consuming contaminated foods or feeds. Thirty samples (representing the different regions) were selected randomly for mycotoxin analyses. These samples were tested for aflatoxin, deoxynivalenol and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

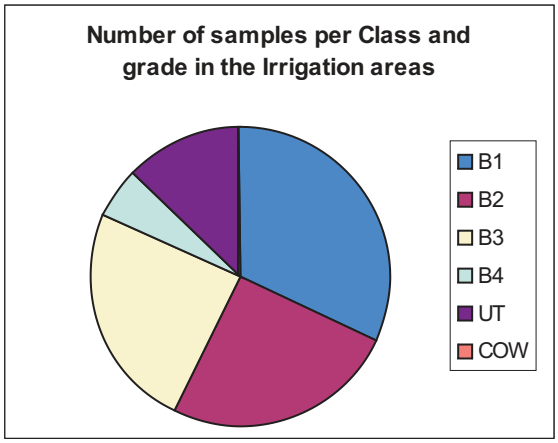
Tests are no longer done for T2, as the fungi producing this mycotoxin only grows at very low temperatures. As from this season, the SAGL did not test for fumonisin and zearalenone, because the fungi producing these toxins on maize do not grow on wheat. The Medical Research Council confirmed that no fumonisin B1 could be detected by high-performance liquid chromatography (HPLC) at a detection limit of 5 ng/g on the previous year's crop samples. The fumonisin method used by the SAGL in the previous season was not applicable to wheat (the crop report stated “out of scope”).

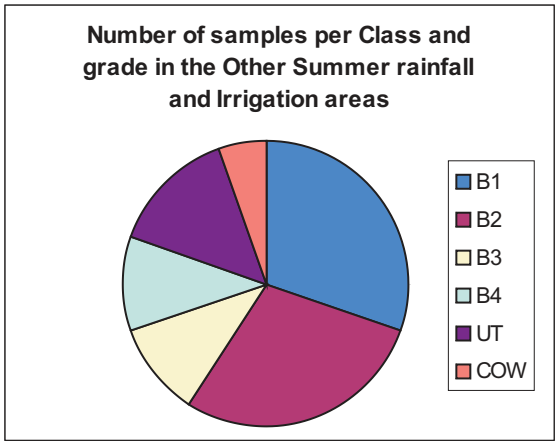
No aflatoxin was found on the 30 samples tested. In accordance with Act 54 of 1972, Foodstuffs, Cosmetics and Disinfectants, the allowable level of total aflatoxin is 10 ppb (µg/kg). In accordance with Act 36 of 1947, Fertilizers, Farm Feeds, Agricultural and Stock Remedies, the allowable level of total aflatoxin is 10 to 50 ppb (µg/kg).

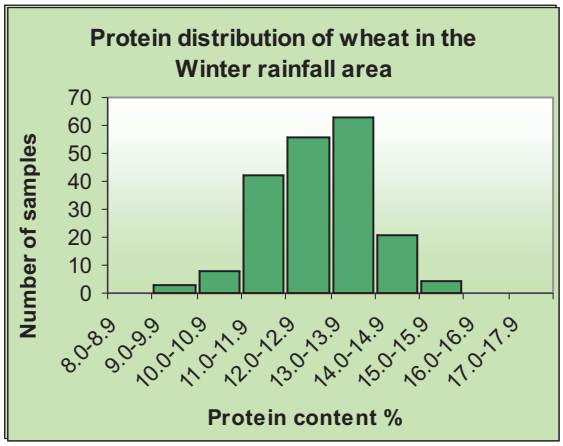
No ochratoxin was found. In all samples tested, levels of deoxynivalenol were found, averaging 1.06 ppm.

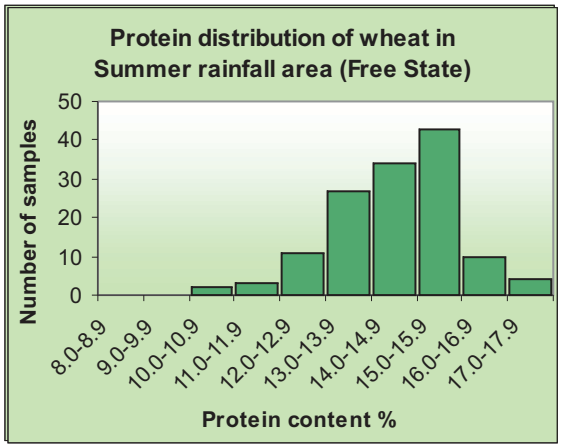

Number of samples per Class and grade in the Winter rainfall area
B1
B2
B3
B4
UT
COW

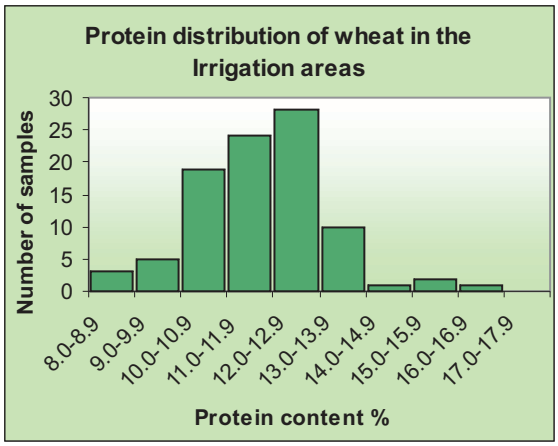

Number of samples per Class and grade in the Summer rainfall area (Free State)
B1
B2
B3
B4
UT
COW

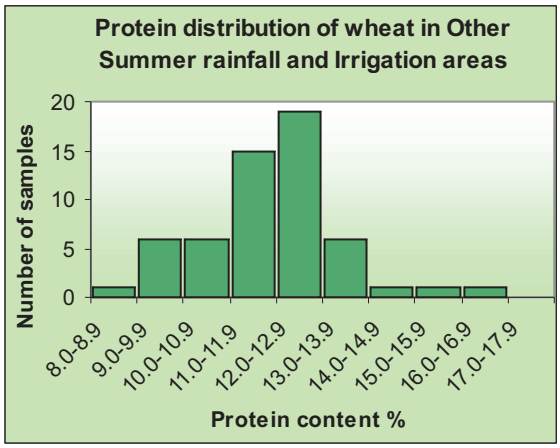

Number of samples per Class and grade in the Irrigation areas
B1
B2
B3
B4
UT
COW


Number of samples per Class and grade in the Other Summer rainfall and Irrigation areas
B1
B2
B3
B4
UT
COW


Protein distribution of wheat in the Winter rainfall area
Number of samples
70
60
50
40
30
20
10
0
8.0-8.9
9.0-9.9
10.0-10.9
11.0-11.9
12.0-12.9
13.0-13.9
14.0-14.9
15.0-15.9
16.0-16.9
17.0-17.9
Protein content %


Protein distribution of wheat in Summer rainfall area (Free State)
Number of samples
50
40
30
20
10
0
8.0-8.9
9.0-9.9
10.0-10.9
11.0-11.9
12.0-12.9
13.0-13.9
14.0-14.9
15.0-15.9
16.0-16.9
17.0-17.9
Protein content %


Protein distribution of wheat in the Irrigation areas
Number of samples
30
25
20
15
10
5
0
8.0-8.9
9.0-9.9
10.0-10.9
11.0-11.9
12.0-12.9
13.0-13.9
14.0-14.9
15.0-15.9
16.0-16.9
17.0-17.9
Protein content %

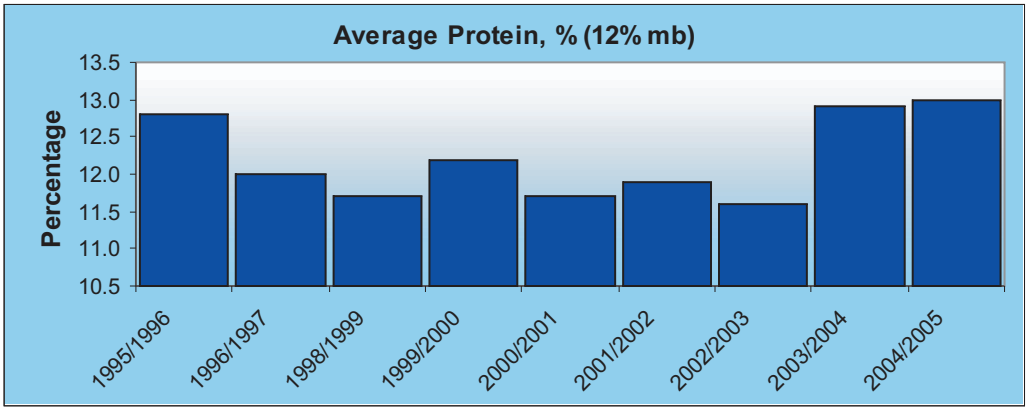

Protein distribution of wheat in Other Summer rainfall and Irrigation areas
Number of samples
20
15
10
5
0
8.0-8.9
9.0-9.9
10.0-10.9
11.0-11.9
12.0-12.9
13.0-13.9
14.0-14.9
15.0-15.9
16.0-16.9
17.0-17.9
Protein content %

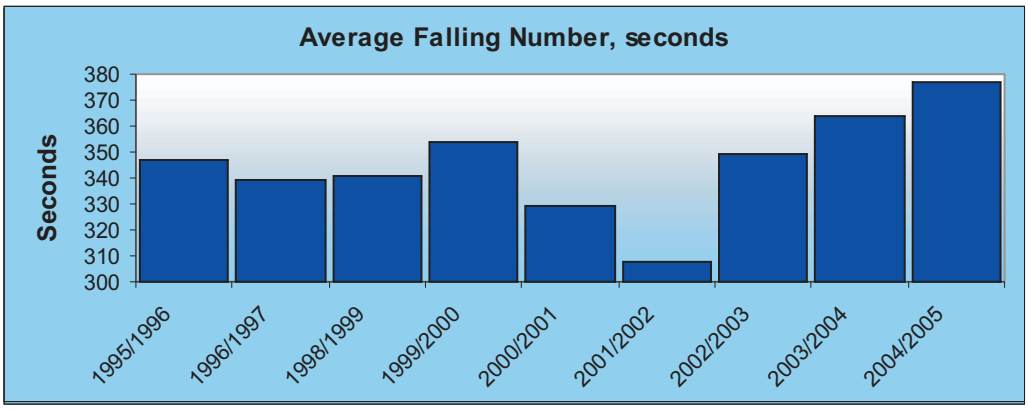
REGIONAL QUALITY WEIGHTED AVERAGES

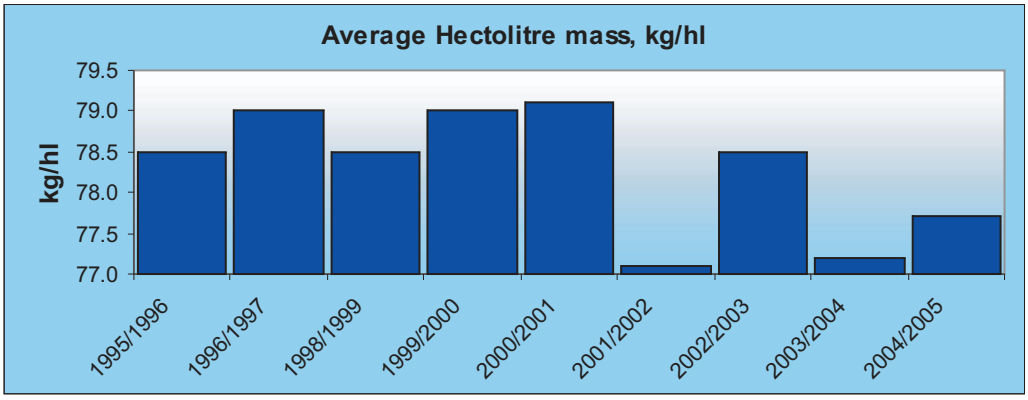
	Winter rainfall area		*Summer rainfall area (Free State)*		*Irrigation areas*		*Other Summer rainfall and Irrigation areas*		*RSA average*	
Individual samples n	***197***		***134***		***93***		***56***		***480***	
Regions	1 to 7		21 to 28		10 to 11, 14 to 20 and 36		29 to 35		All	
Hectolitre mass dirty, kg/hl	77.6		76.3		78.9		79.3		77.7	
1000 kernel mass (13 % mb), g	34.7		32.0		37.7		39.3		35.1	
Falling number, sec	371		368		398		389		377	
Screenings (1,8 mm), %	1.63		2.17		1.82		1.91		1.85	
Protein (12 % mb), %	12.72		14.59		11.78		11.87		12.96	
Mixogram peak time, min (Quadromat)	2.8		3.3		2.7		2.6		2.9	
Composite samples per grade	***B1***	***B2***	***B1***	***B2***	***B1***	***B2***	***B1***	***B2***	***B1***	***B2***
n = 80	***B3***	***B4***	***B3***	***B4***	***B3***	***B4***	***B3***	***B4***	***B3***	***B4***
Bühler extraction, %	75.1	74.9	74.2	73.5	75.6	75.1	75.1	74.7	74.9	74.5
	74.3	72.9	73.7	72.8	75.6	75.1	76.2	76.5	74.7	74.0
Flour colour, KJ	-1.2	-1.3	-0.6	-0.5	-1.6	-1.9	-1.6	-1.1	-1.2	-1.2
	-1.2	-1.1	-0.5	-0.6	-1.8	-2.9	-2.0	-1.2	-1.3	-1.4
Farinogram:	61.2	61.6	62.4	61.5	61.0	60.4	61.4	61.6	61.6	61.2
Water absorption, %	60.0	60.8	61.7	61.0	59.6	58.0	61.4	61.9	60.5	60.5
Farinogram:	5.0	4.7	5.9	6.1	5.1	4.7	4.4	4.4	5.2	5.0
Development time, min	3.8	5.6	6.5	7.1	4.5	2.9	3.6	5.6	4.9	5.5
Alveogram:	37.3	35.3	49.7	48.2	37.6	34.5	34.4	39.3	40.9	39.5
Strength, cm²	34.8	40.3	46.6	51.7	32.8	26.0	30.3	44.3	37.7	41.6
Alveogram:	0.62	0.80	0.63	0.59	0.58	0.58	0.50	0.69	0.59	0.65
P/L	0.66	0.77	0.53	0.46	0.56	0.64	0.88	0.69	0.60	0.63
Extensogram:	108	96	126	142	116	109	110	120	116	118
Strenght, cm²	100	117	133	153	99	77	84	123	109	121
Mixogram peak time,	2.5	2.5	2.6	2.8	2.4	2.5	2.2	2.7	2.5	2.6
min	2.7	2.7	2.8	3.1	2.6	2.7	2.4	2.8	2.7	2.8
Relationship between protein and bread volume	Ex Ex	VG VG	VG VG	VG VG	Ex Ex	Ex Ex	Ex Ex	Ex VG	Excellent	

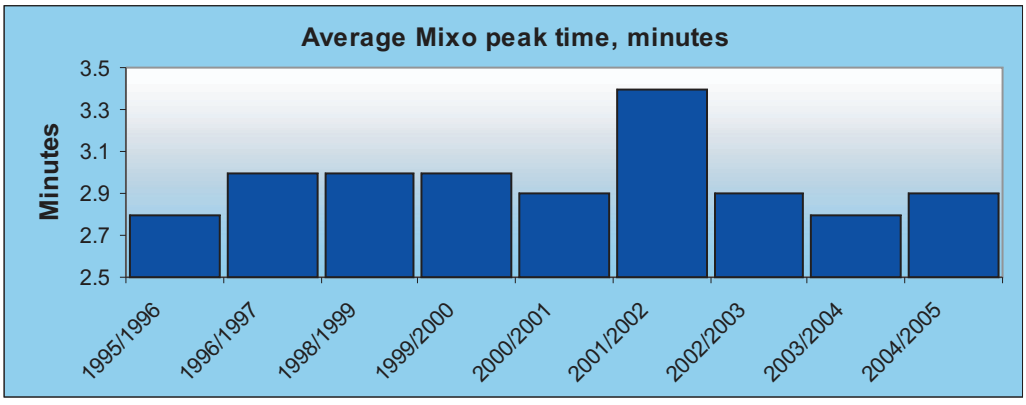
Ex = Excellent **VG = Very Good**

AVERAGE QUALITY OVER 10 SEASONS
(1997 / 1998 no data available)









REGIONAL QUALITY

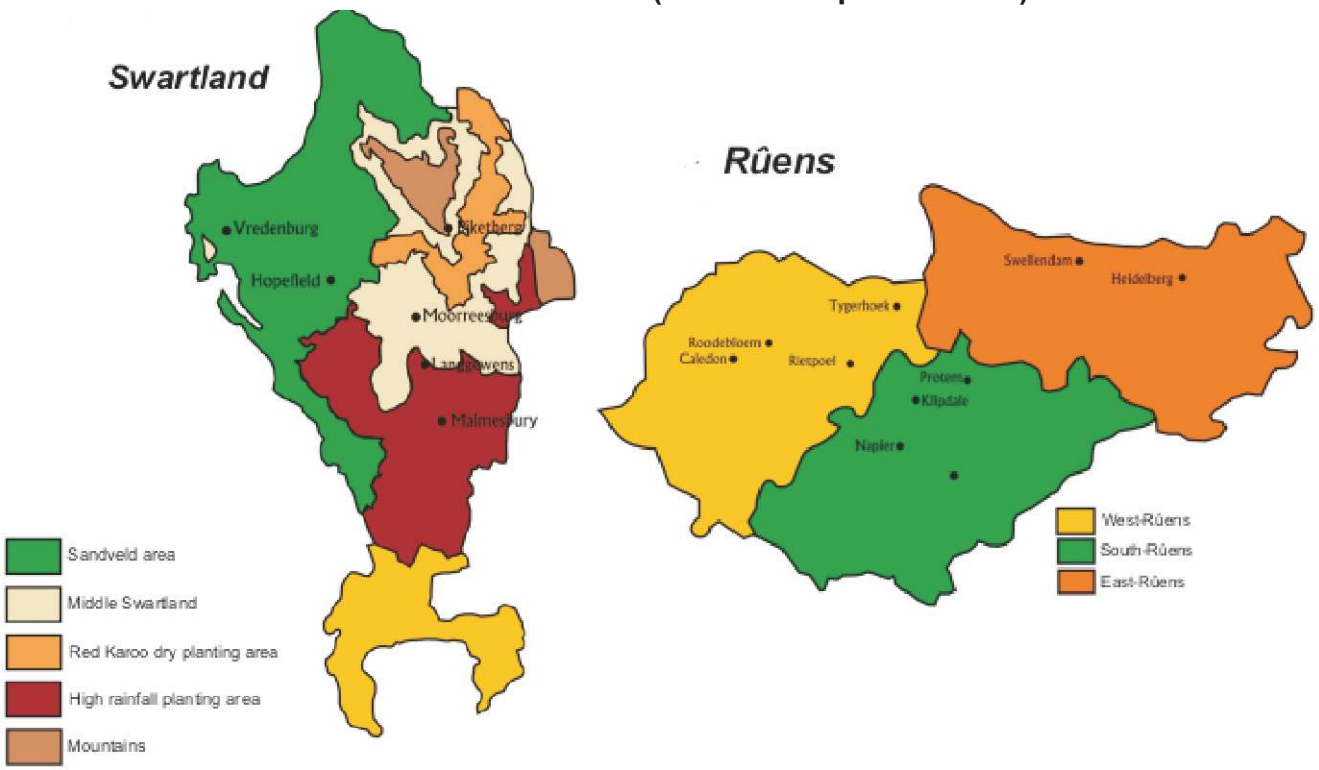
WINTER RAINFALL AREA
(Western Cape)

Production regions 1 to 7 fall within the winter rainfall area, regions 1 to 6 are the southern and western Western Cape province and region 7 is the southern coastal areas of the Eastern Cape province.

The hectolitre mass averaged 77.6 kg/hl and is the same as the previous year (77.5 kg/hl). The thousand kernel mass averaged 34.7 gram, which is better than the previous year's 32.4 gram. Two samples from Napier in production region number 5 had falling numbers below 250 seconds. The average falling number was 371 seconds.

The protein averaged 12.72 % (12 % mb) and is 0.74 % higher than the previous year (11.98 %). The Ruêns had a normal crop while the Swartland was drought-stricken. The drought in the Swartland resulted in poor yield as well as poor quality wheat. The average protein in the Swartland was 13.1 % (12.6 % the previous year) and the average protein in the Ruêns was 11.9 % (10.8 % in 2003/2004). Only one sample was received from the Eastern Cape (production region 7) and had a protein of 11.75 %. The hectolitre mass of the Ruêns and Swartland was 77.78 kg/hl and 77.54 kg/hl respectively.

Winter Rainfall Area (Western Cape Province)



The screenings of 1.63 % were much lower than the previous season's 2.47 %. The screenings in the Swartland averaged 1.34 % and that of the Ruêns 2.27 %. The Bühler extraction averaged 74.3 % (average of wheat grades B1 to B4) and the average colour of the flour was -1.2 KJ units. Both these characteristics were better than those of the wheat of the Free State, but not as good as those of the wheat from the Other Rainfall areas and the Vaal and Orange River irrigation wheat.

The dough quality was the same as the previous year. The mixogram peak time (Quadromat mill) averaged 2.8 minutes. The average farinogram absorption was 60.0 %. The average strength of the alveogram was 37.0 cm² (Free State area was 49.0 cm²) and the average strength of the extensogram was 105 cm², which is average to the other production regions but weaker than the wheat from the Free State (139 cm²).

SUMMER RAINFALL AREA
(Free State)

Production regions 21 to 28 fall within the Free State province, which had the highest production of all the provinces, namely 525 000 tons (CEC).

The physical characteristics such as hectolitre mass (76.3 kg/hl), thousand kernel mass (32.0 gram) and screenings (2.17 %) were more or less the same as in the previous year.

The average protein content was 14.59 % (12 % mb), which is 0.65 % higher than the previous year's 13.94 %. The Free State, except for the southern Free State, experienced a drought because of the absence of spring rain. Although the southern Free State had rain in the beginning of August, the average protein was 14.0 % (12 % mb) and the average hectolitre mass was 76.2 kg/hl. This does not differ significantly from the central Free State, with an average of 14.75 % protein and 76.2 kg/hl mass, eastern Free State with an average of 14.93 % protein and 76.2 kg/hl mass and the north-west Free State with an average of 14.34 % protein and 76.7 kg/hl mass. The eastern Free State experienced the worst conditions.

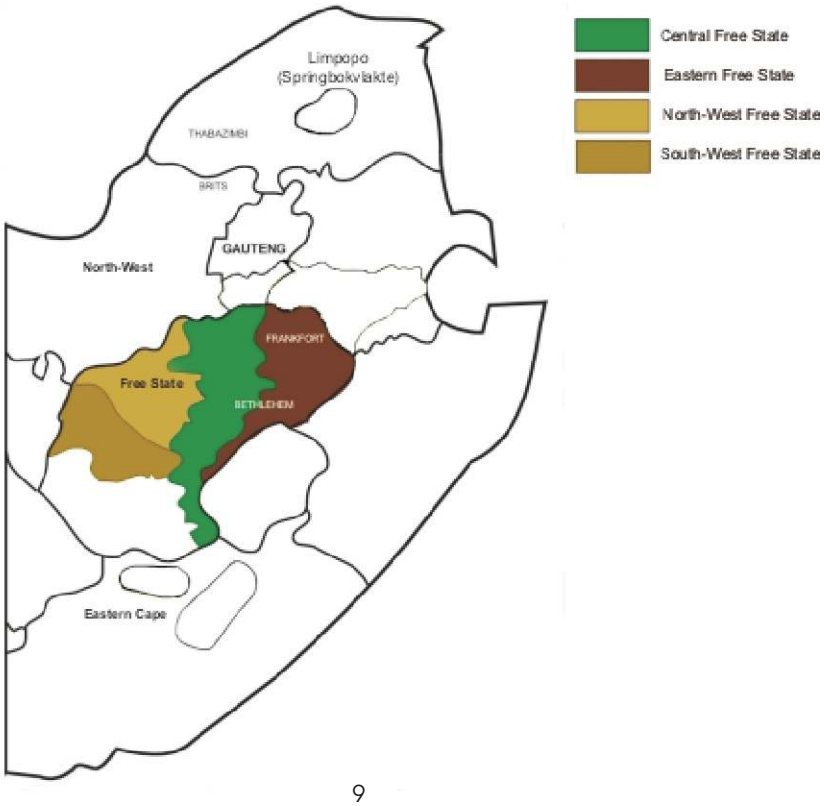
The mixogram (Quadromat) peak time increased by 0.4 minutes to 3.3 minutes, giving the Free State the longest average mixogram peak time of the different regional qualities.

The average Bühler extraction percentage was the lowest of the regions, namely 73.6 %. The Kent Jones colour was -0.6 KJ units, which is darker than the averages of the other regions.

The average farinogram water absorption was a good 61.7 %, beating the other regions by about 1 %. The wheat from the Free State tends to give a stronger dough than the other regions, with a farinogram development time of 6.4 minutes, alveogram strength of 49.0 cm², and an extensogram strength of 139 cm².

The 100-gram baking test showed that the relationship between protein content and bread volume was very good, but not as good as the wheat from the other regions.

FREE STATE



SUMMER RAINFALL AREA
(Mpumalanga, Limpopo, Gauteng and Eastern Cape)

Other summer rainfall regions, excluding the Free State, are mainly regions 29, 30, 32, 33 (Mpumalanga), 34 (Gauteng) and 35 (Limpopo). They produced in total about 64 000 tons during this season. No samples were received from the Eastern Cape.

The average hectolitre mass was 79.3 kg/hl. This is the highest of the four regions being discussed. The thousand kernel mass was also the highest, i.e. an average of 39.3 g.

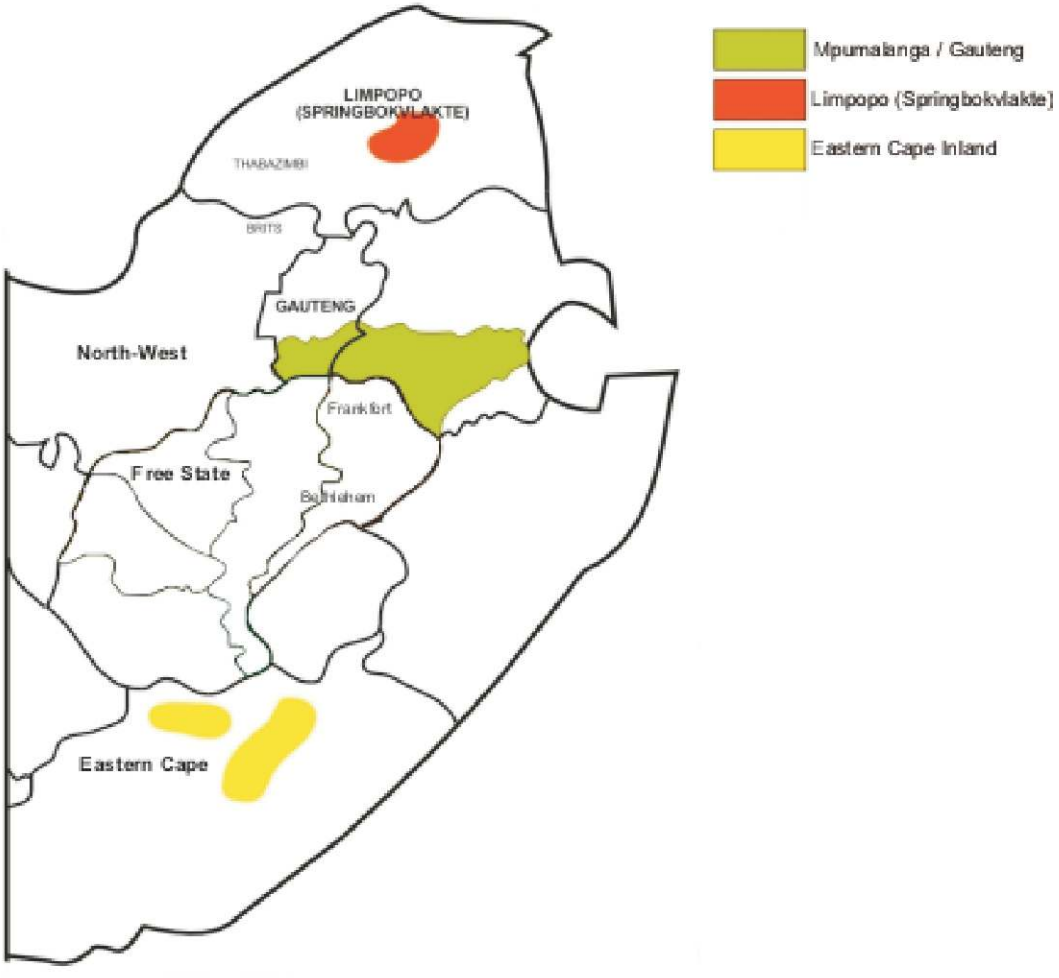
The average falling number was 389 seconds. The average percentage screenings were 1.91 %. The average protein content was 11.87 %.

The average mixogram (Quadromat) peak time was the shortest of the four regions, namely 2.6 minutes.

The average Bühler extraction was 75.6 %, with an average colour of -1.5 KJ units. The farinogram had a good average water absorption of 61.6 % and an average development time of 4.5 minutes.

The average alveogram strength was 37.1 cm², with an average P/L value of 0.69, and the average extensogram strength was 109 cm².

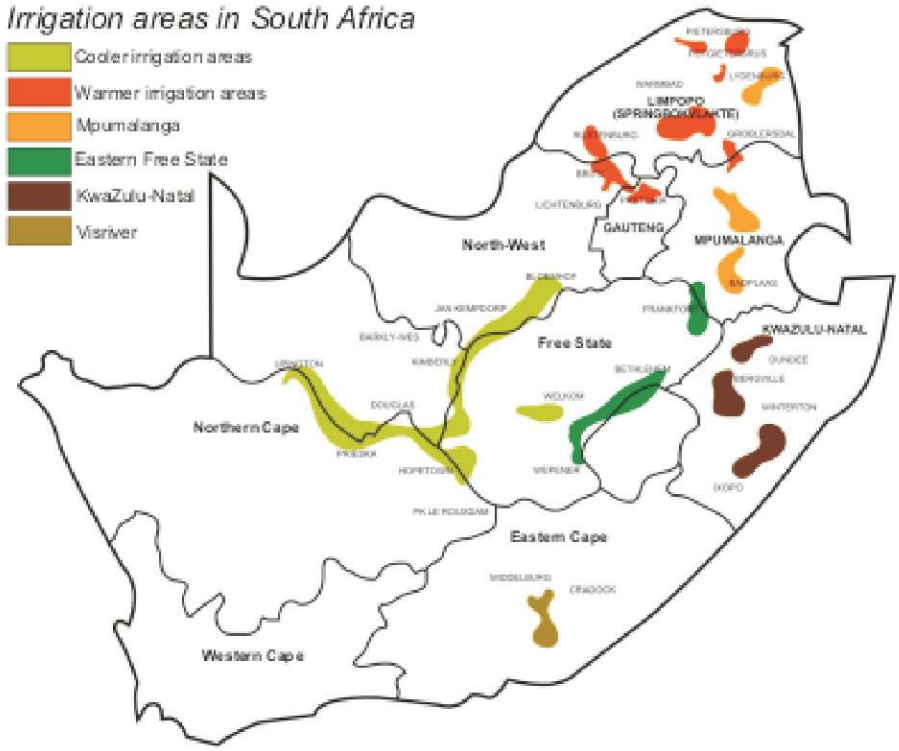
The 100-gram baking test showed a good relationship between protein content and bread volume.



(Regional maps kindly provided by the Small Grains Institute, ARC)

IRRIGATION AREAS

(Vaal and Orange River plus other irrigation areas. See map.)



The average hectolitre mass was 78.9 kg/hl and the thousand kernel mass was 37.7 g. The average falling number was the highest, namely 398 seconds. The average screenings were relatively low (1.82 %) and the protein had a normal average of 11.78 % (12 % mb).

The average mixogram (Quadromat) peak time was 2.7 minutes.

The average Bühler extraction percentage was 75.4, with an average flour colour of -2.0 KJ units.

The average farinogram water absorption was below 60 %, namely 59.8 %, with an average farinogram development time of 4.3 minutes.

The average alveogram strength was 32.7 cm^2 and the average P/L was 0.59.

The average extensogram strength was 100 cm^2. The relationship between protein content and bread volume was shown to be excellent by the 100-gram baking test.

SUMMARY OF THESE FOUR REGIONS

Given the drought conditions in the Western Cape and Free State, the crop in these two areas yielded abnormal high proteins, especially in the Free State, and also gave the lowest average hectolitre mass.

The Free State produced on average stronger flour, with higher alveogram and extensogram strengths.

The dough quality of the winter rainfall area and the other summer rainfall areas (excluding the Free State) was very similar.

The irrigation wheat gave on average dough of a little weaker quality than the other areas.

SOUTH AFRICAN
WINTER RAINFALL WHEAT
Western Cape Province

	(1)				(2)				(3)			
PRODUCTION REGION	**Namakwaland**				**Swartland Western Region**				**Swartland Central Region**			
Intake silos	Bitterfontein Graafwater Landplaas Vanrhynsdorp Vredendal				Bergrivier Darling Koperfontein Vredenburg				Eendekuil Klipheuwel Koringberg Malmesbury Moorreesburg Moravia Piketberg Pools Ruststasie			
WHEAT												
	ave	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Protein (12% mb), %	12.36	11.17	14.22	1.63	13.33	12.28	14.41	0.60	13.55	10.52	15.62	1.01
Falling number, sec	387	363	428	35.68	390	371	419	11.55	378	326	435	18.35
1000 Kernel mass (13% mb), g	34.5	30.2	39.9	4.93	32.5	27.6	36.9	2.54	32.2	25.0	39.3	3.08
Hectolitre mass (dirty), kg/hl	77.4	75.8	79.2	1.71	76.4	71.2	78.5	2.05	76.7	68.7	80.5	2.40
Screenings (<1.8mm), %	0.90	0.63	1.18	0.28	1.80	0.67	4.07	1.18	1.66	0.18	5.07	1.36
Foreign matter, %	0.19	0.08	0.30	0.11	0.23	0.08	0.88	0.19	0.21	0.00	1.30	0.21
Combined deviations, %	3.65	2.93	4.38	0.73	3.19	1.62	6.68	1.73	3.06	1.01	7.11	1.75
Number of samples	***3***				***19***				***62***			
CULTIVARS												
SST 57	41.8				14.7				14.3			
cultivars SST 88	22.3				71.8				73.9			
with highest % SST 825	11.3				3.6				0.8			
occurrence SST 65	7.3				4.4				5.0			
PAN 3490	6.0				1.2				1.2			
Number of samples	***3***				***19***				***62***			
MIXOGRAM (Quadromat)												
	ave	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Peak time, min	2.8	2.7	3.0	0.15	2.8	2.3	4.0	0.34	2.9	2.1	3.6	0.32
Tail height (6min), mm	52	51	52	0.58	53	49	60	3.00	52	46	56	2.17
Number of samples	***3***				***19***				***62***			
					B1		**B3**		**B1**	**B2**	**B3**	**B4**
BÜHLER EXTRACTION, %					74.8		73.4		75.0	73.6	73.3	72.2
FLOUR												
Protein (12% mb), %					12.4		13.4		13.0	12.5	13.0	14.4
Colour, KJ					-1.0		-0.8		-1.4	-1.8	-1.5	-1.0
FARINOGRAM												
Water absorption (14% mb), %					60.5		61.4		61.2	60.2	60.5	61.6
Development time, min					5.3		5.0		5.7	5.3	4.7	9.3
Stability, min					10.0		11.2		13.6	12.4	10.8	15.0
Mixing Tolerance Index, BU					36		30		28	33	28	38
EXTENSOGRAM (45 min pull)												
Area, cm2					130		134		115	125	120	150
Maximum height, BU					445		420		390	430	415	470
Extensibility, mm					208		214		208	194	201	228
ALVEOGRAM												
Strength, cm2					39.1		42.5		41.1	40.4	43.4	51.1
Stability (P), mm					79		78		76	72	74	74
Distensibility (L), mm					113		128		131	133	145	168
Configuration ratio (P/L)					0.70		0.61		0.58	0.54	0.51	0.44
MIXOGRAM												
Peak time, min					2.7		2.5		2.4	2.7	2.5	2.7
100g BAKING TEST												
Loaf volume, cm3					970		1040		1020	955	985	1055
Evaluation					0		0		0	0	0	1

SOUTH AFRICAN
WINTER RAINFALL WHEAT
Western Cape Province

PRODUCTION REGION	(4) Swartland Eastern Region	(5) Ruens Western Region	(6) Ruens Eastern Region
Intake silos	Ceres Gouda Halfmanshof Leliedam Porterville Riebeeck-Wes	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	ave	min	max	stdev
Protein (12% mb), %	12.50	10.40	14.14	0.94	12.07	9.28	13.59	0.74	11.61	9.14	13.40	1.06
Falling number, sec	367	301	429	26.21	349	117	427	58.68	377	264	432	32.58
1000 Kernel mass (13% mb), g	34.6	26.1	40.6	2.89	37.5	31.0	47.3	3.52	38.3	32.6	44.8	3.21
Hectolitre mass (dirty), kg/hl	79.0	73.2	81.4	1.49	77.5	75.4	80.5	1.48	78.3	75.7	80.5	1.48
Screenings (<1.8mm), %	0.82	0.16	3.73	0.97	2.85	0.75	8.83	1.42	1.18	0.45	2.90	0.68
Foreign matter, %	0.11	0.00	0.38	0.06	0.27	0.04	2.16	0.38	0.20	0.08	0.84	0.20
Combined deviations, %	1.89	0.46	5.39	1.17	4.44	1.37	10.77	1.82	2.16	0.00	5.16	1.16
Number of samples	***51***				***40***				***21***			

CULTIVARS				
	SST 88	62.0	56.8	34.7
cultivars	SST 57	20.5	26.2	37.1
with highest %	SST 94	7.7	12.5	21.5
occurrence	SST 65	6.6	3.7	4.8
	SST 825	1.8	0.2	0.5
Number of samples		***51***	***40***	***21***

MIXOGRAM (Quadromat)	ave	min	max	stdev	ave	min	max	stdev	ave	min	max	stdev
Peak time, min	2.8	2.2	3.3	0.25	2.5	2.2	2.8	0.17	2.9	2.2	6.0	0.81
Tail height (6min), mm	50	39	55	2.69	50	42	54	2.20	49	46	57	2.64
Number of samples	***51***				***40***				***21***			

BÜHLER EXTRACTION, %	B1	B2	B3	B4	B1	B2	B3		B1	B2	B3	B4
	74.7	74.5	76.0	71.3	76.0	75.6	74.3		75.2	74.6	74.6	75.2
FLOUR												
Protein (12% mb), %	12.4	10.8	9.9	12.8	11.7	11.3	11.3		11.7	10.6	9.7	8.7
Colour, KJ	-1.7	-2.0	-1.5	-0.6	-0.9	-0.3	-0.8		-1.2	-1.2	-1.5	-1.8
FARINOGRAM												
Water absorption (14% mb), %	61.0	60.6	61.3	62.2	62.5	61.6	59.9		60.7	59.8	56.8	58.5
Development time, min	4.5	5.2	3.8	5.5	5.0	4.3	3.3		4.3	4.3	2.1	2.0
Stability, min	11.2	9.2	6.3	12.6	6.4	6.4	5.7		7.0	6.8	5.6	5.2
Mixing Tolerance Index, BU	26	40	52	27	53	52	59		51	55	56	59
EXTENSOGRAM (45 min pull)												
Area, cm2	123	100	74	127	85	84	90		86	87	80	73
Maximum height, BU	410	405	330	445	310	305	320		325	345	400	330
Extensibility, mm	210	175	156	191	185	177	192		181	173	145	152
ALVEOGRAM												
Strength, cm2	42.4	38.2	32.9	45.4	33.3	34.4	29.4		30.4	29.7	26.0	24.5
Stability (P), mm	72	76	82	87	78	76	62		66	66	64	75
Distensibility (L), mm	144	120	93	118	102	112	126		114	108	81	67
Configuration ratio (P/L)	0.50	0.64	0.88	0.74	0.76	0.68	0.49		0.58	0.61	0.79	1.12
MIXOGRAM												
Peak time, min	2.4	2.8	2.5	2.5	2.3	2.3	2.4		2.7	2.7	3.8	2.9
100g BAKING TEST												
Loaf volume, cm3	950	885	835	925	910	935	875		865	855	780	780
Evaluation	0	0	0	2	0	0	0		1	0	0	0

SOUTH AFRICAN

WINTER RAINFALL WHEAT (AND IRRIGATION)
Eastern Cape

IRRIGATION WHEAT
Vaal and Orange river area

PRODUCTION REGION	(7) Eastern Cape Southern Region	(10) Griekwaland - West	(11) Vaalharts
Intake silos	Avontuur Humansdorp Paterson Uitenhage	Britstown Douglas Havenga Brug Marydale Modderrivier Oranjerivierstasie Prieska Rietrivier Upington	Barkly-Wes Hartswater Jan Kemp Magogong Taung

WHEAT	ave	min	max	stdev	ave	min	max	stdev	ave	min	max	stdev
Protein (12% mb), %	11.75				11.90	10.58	12.89	0.75	11.97	10.86	13.09	0.80
Falling number, sec	414				433	376	523	41.37	419	344	509	43.45
1000 Kernel mass (13% mb), g	47.0				35.2	31.3	40.8	2.59	36.5	35.0	38.4	1.33
Hectolitre mass (dirty), kg/hl	82.0				79.4	75.5	81.8	1.67	78.9	74.3	80.6	1.95
Screenings (<1.8mm), %	0.88				1.96	0.73	2.74	0.70	2.62	1.75	4.18	0.67
Foreign matter, %	0.00				0.17	0.08	0.34	0.07	0.12	0.06	0.32	0.07
Combined deviations, %	2.56				2.84	1.67	3.96	0.75	3.68	2.45	5.29	0.84
Number of samples	***1***				***16***				***11***			

CULTIVARS				
	SST 825	45.0	2.5	13.9
cultivars	SST 806	26.0	40.2	43.8
with highest %	SST 876	20.0	20.4	17.2
occurrence	Olifants	9.0	12.3	4.1
	CRN 826		9.5	12.8
Number of samples		***1***	***16***	***11***

MIXOGRAM (Quadromat)	ave	min	max	stdev	ave	min	max	stdev	ave	min	max	stdev
Peak time, min	2.3				2.6	2.2	3.3	0.30	2.6	2.2	3.2	0.29
Tail height (6min), mm	52				50	46	57	2.83	50	47	54	1.96
Number of samples	***1***				***16***				***11***			

	B2	**B1**	**B2**	**B3**	**B1**	**B2**	**B3**
BÜHLER EXTRACTION, %	76.2	75.4	76.4	76.1	74.9	75.2	73.9
FLOUR							
Protein (12% mb), %	10.8	11.6	10.8	10.3	11.6	10.6	11.2
Colour, KJ	-1.3	-1.5	-2.0	-2.0	-2.0	-2.2	-1.5
FARINOGRAM							
Water absorption (14% mb), %	65.6	60.9	61.0	59.8	60.3	59.2	59.0
Development time, min	4.2	5.5	4.3	4.3	4.5	4.8	6.0
Stability, min	7.0	8.0	7.3	7.1	6.7	7.4	8.1
Mixing Tolerance Index, BU	47	48	50	55	51	54	53
EXTENSOGRAM (45 min pull)							
Area, cm2	82	133	123	110	100	107	100
Maximum height, BU	335	455	430	420	395	425	365
Extensibility, mm	166	199	197	180	182	173	187
ALVEOGRAM							
Strength, cm2	33.6	37.2	41.0	34.7	35.2	34.9	34.1
Stability (P), mm	105	72	76	72	66	68	62
Distensibility (L), mm	68	122	129	115	136	125	141
Configuration ratio (P/L)	1.54	0.59	0.59	0.62	0.48	0.54	0.44
MIXOGRAM							
Peak time, min	1.9	2.7	2.6	2.8	2.3	2.5	2.9
100g BAKING TEST							
Loaf volume, cm3	755	935	895	845	955	870	925
Evaluation	3	0	0	0	0	0	0

SOUTH AFRICAN
MAINLY IRRIGATION
North-West Province

PRODUCTION REGION	(14) North-West Southern Region	(15) North-West South-Eastern Region	(17) North-West Central Northern Region (Ottosdal)
Intake silos	Amalia Barberspan Delareyville Excelsior Geysdorp Hallat's Hope Migdol Nooitgedacht Schweizer-Reneke Taaibospan	Bloemhof Christiana Hertzogville Hoopstad Kingswood	Bospoort Hartbeesfontein Kleinharts Melliodora Ottosdal Rostrataville Vermaas Werda

WHEAT

	ave	min	max	stdev	ave	min	max	stdev	ave	min	max	stdev
Protein (12% mb), %	13.19	11.72	15.02	1.28	13.18	10.65	16.37	1.84	10.93	10.17	11.74	0.79
Falling number, sec	390	366	406	15.17	368	338	400	24.29	381	342	421	39.51
1000 Kernel mass (13% mb), g	36.0	31.3	40.1	4.05	35.5	27.3	42.2	4.86	40.6	35.1	43.9	4.77
Hectolitre mass (dirty), kg/hl	76.7	72.6	79.8	2.61	79.2	76.6	81.3	1.67	80.5	79.7	81.6	1.00
Screenings (<1.8mm), %	3.14	2.12	4.64	0.94	1.10	0.80	1.52	0.25	1.10	0.72	1.46	0.37
Foreign matter, %	0.12	0.06	0.20	0.06	0.05	0.04	0.08	0.02	0.09	0.08	0.10	0.01
Combined deviations, %	5.60	4.32	8.34	1.63	1.77	1.40	2.07	0.23	1.64	1.04	2.16	0.56
Number of samples	***5***				***6***				***3***			

CULTIVARS

cultivars with highest % occurrence	SST 806	51.4	7.8	55.7
	SST 876	23.6	4.0	44.3
	SST 966		29.7	
	PAN 3377		17.5	
	Baviaans		16.7	
Number of samples		***5***	***6***	***3***

MIXOGRAM (Quadromat)

	ave	min	max	stdev	ave	min	max	stdev	ave	min	max	stdev
Peak time, min	2.6	2.5	2.8	0.15	2.5	1.9	3.3	0.50	2.5	2.3	2.8	0.26
Tail height (6min), mm	54	51	58	2.86	52	47	58	3.87	52	50	53	1.53
Number of samples	***5***				***6***				***3***			

BÜHLER EXTRACTION, %	**B2**	**B1**	**B2**	**B3**			**B2**	**B3**	
	73.6	74.5	70.3	76.8			76.9	76.6	
FLOUR									
Protein (12% mb), %	11.6	12.0	13.8	10.1			11.0	9.8	
Colour, KJ	-1.9	-1.6	-1.4	-1.6			-2.3	-2.1	
FARINOGRAM									
Water absorption (14% mb), %	60.5	63.2	60.7	59.1			61.6	59.4	
Development time, min	5.3	5.3	5.5	4.7			4.7	4.0	
Stability, min	8.6	8.7	10.3	8.2			6.8	6.3	
Mixing Tolerance Index, BU	43	37	32	45			60	59	
EXTENSOGRAM (45 min pull)									
Area, cm2	114	95	101	91			116	95	
Maximum height, BU	425	360	395	370			395	385	
Extensibility, mm	187	193	177	174			204	169	
ALVEOGRAM									
Strength, cm2	34.7	40.1	35.5	32.9			37.9	31.2	
Stability (P), mm	75	85	69	68			74	68	
Distensibility (L), mm	102	108	116	112			127	114	
Configuration ratio (P/L)	0.74	0.78	0.60	0.61			0.58	0.60	
MIXOGRAM									
Peak time, min	2.6	2.3	2.4	2.8			2.2	2.6	
100g BAKING TEST									
Loaf volume, cm3	950	920	1065	840			865	880	
Evaluation	0	0	0	0			0	0	

SOUTH AFRICAN
MAINLY IRRIGATION
North-West Province

PRODUCTION REGION	(18) North-West Central Region (Ventersdorp)	(19) North-West Central Region (Lichtenburg)	(20) North-West Eastern Region
Intake silos	Bodenstein Buckingham Coligny Enselspruit Makokskraal Potchefstroom Ventersdorp	Grootpan Halfpad Hibernia Lichtenburg Lottiehalte Lusthof	Battery Boons Brits Derby Koster Rustenburg Swartruggens Syferbult

WHEAT	ave	min	max	stdev	ave	min	max	stdev	ave	min	max	stdev
Protein (12% mb), %	11.16	8.92	12.72	1.70	11.60	9.65	14.34	1.33	11.05	8.78	13.52	1.32
Falling number, sec	381	369	386	8.12	376	292	434	36.10	388	337	436	23.93
1000 Kernel mass (13% mb), g	39.2	37.7	42.3	2.11	39.5	32.4	45.0	4.46	39.7	34.1	47.8	2.82
Hectolitre mass (dirty), kg/hl	78.7	77.3	79.8	1.27	78.0	74.1	81.3	2.38	79.7	76.9	81.8	1.20
Screenings (<1.8mm), %	0.85	0.60	1.04	0.19	1.53	0.63	5.51	1.29	1.62	0.52	3.22	0.63
Foreign matter, %	0.12	0.08	0.14	0.03	0.11	0.04	0.26	0.06	0.11	0.04	0.38	0.07
Combined deviations, %	1.70	1.08	2.06	0.43	2.23	1.35	6.37	1.39	2.48	1.21	4.39	0.81
Number of samples	***4***				***12***				***28***			

CULTIVARS				
cultivars with highest % occurrence	SST 806	50.8	54.8	31.0
	SST 876	28.5	27.2	16.0
	Baviaans	11.8		2.0
	SST 825	1.5	3.3	7.0
	Olifants		1.8	19.4
Number of samples		***4***	***12***	***28***

MIXOGRAM (Quadromat)	ave	min	max	stdev	ave	min	max	stdev	ave	min	max	stdev
Peak time, min	3.0	2.7	3.3	0.29	2.6	2.2	2.9	0.26	2.9	2.1	4.5	0.54
Tail height (6min), mm	48	42	51	4.03	49	43	54	3.19	49	41	57	3.72
Number of samples	***4***				***12***				***28***			

	B1	B2	B3	B4	B1	B2	B3	B4
BÜHLER EXTRACTION, %	76.7	75.5	76.2	75.0	75.8	75.8	75.8	75.2

FLOUR								
Protein (12% mb), %	11.5	10.6	10.3	8.8	12.0	10.5	9.7	8.3
Colour, KJ	-1.6	-2.1	-2.7	-3.1	-1.8	-1.5	-2.1	-2.7
FARINOGRAM								
Water absorption (14% mb), %	59.3	59.5	59.9	58.9	61.6	59.8	60.1	57.0
Development time, min	4.3	4.5	3.8	3.7	4.8	4.3	3.7	2.1
Stability, min	7.7	5.9	4.7	5.6	9.0	7.7	6.1	5.9
Mixing Tolerance Index, BU	46	65	78	66	40	45	56	51
EXTENSOGRAM (45 min pull)								
Area, cm2	121	109	95	81	132	106	87	73
Maximum height, BU	405	385	355	375	435	410	400	370
Extensibility, mm	210	192	181	147	209	174	150	135
ALVEOGRAM								
Strength, cm2	33.2	32.0	29.5	27.8	38.8	32	31.3	24.2
Stability (P), mm	59	62	61	66	75	71	76	61
Distensibility (L), mm	146	138	129	106	125	103	101	95
Configuration ratio (P/L)	0.41	0.45	0.47	0.63	0.60	0.69	0.75	0.65
MIXOGRAM								
Peak time, min	2.4	2.5	2.3	2.5	2.2	2.7	2.2	2.8
100g BAKING TEST								
Loaf volume, cm3	985	905	915	800	965	860	810	760
Evaluation	0	0	0	0	0	0	0	0

SOUTH AFRICAN

SUMMER RAINFALL WHEAT (AND IRRIGATION)

Free State Province (Central)

Free State Province (South-Western)

PRODUCTION REGION	(21) Free State North-Western Region (Viljoenskroon)	(26) Free State South-Eastern Region	(27) Free State Northern Region	(24) Free State Central Region
Intake silos	Attie Groenebloem Heuningspruit Koppies Rooiwal Vierfontein Viljoenskroon Vredefort Weiveld	Arlington Kaallaagte Libertas Marquard Meets Monte Video Senekal Steynsrus	Gottenburg Heilbron Hoogte Mooigeleë Petrus Steyn Wolwehoek	Bloemfontein Brandfort De Brug Geneva Hennenman Koffiefontein Kroonstad Petrusburg Theunissen Van Tonder Welgeleë Winburg

WHEAT	ave	min	max	stdev	ave	min	max	stdev	ave	min	max	stdev	ave	min	max	stdev
Protein (12% mb), %	13.40	10.86	14.97	1.18	15.04	11.92	16.21	0.80	15.71	14.71	17.92	1.09	14.75	11.69	17.84	1.63
Falling number, sec	366	292	401	32.75	371	309	497	34.34	348	322	393	26.79	375	265	417	38.32
1000 Kernel mass (13% mb), g	30.5	24.5	38.6	4.59	30.0	26.3	36.6	2.26	29.8	26.4	31.5	1.72	32.7	25.7	39.0	4.23
Hectolitre mass (dirty), kg/hl	77.7	75.4	80.0	1.38	76.0	71.9	79.7	2.17	75.8	70.8	78.7	2.79	76.2	64.8	79.7	3.77
Screenings (<1.8mm), %	2.46	0.52	8.72	2.37	2.21	1.10	3.83	0.62	1.73	0.59	3.90	1.13	2.38	1.03	6.37	1.53
Foreign matter, %	0.12	0.06	0.24	0.06	0.13	0.06	0.50	0.09	0.09	0.08	0.12	0.02	0.18	0.06	0.46	0.11
Combined deviations, %	3.52	1.74	10.00	2.40	3.16	1.97	5.06	0.76	2.77	1.51	5.30	1.37	3.45	1.56	7.81	1.87
Number of samples	***10***				***26***				***8***				***16***			

CULTIVARS					
cultivars with highest % occurrence	Elands	31.7	29.0	30.6	5.7
	PAN 3349	14.3	6.4	11.9	8.1
	Gariep	12.3	17.0	1.0	30.0
	PAN 3377	5.3	5.2	24.4	11.4
	SST 399	4.7	10.6	10.9	2.5
Number of samples		***10***	***26***	***8***	***16***

MIXOGRAM (Quadromat)	ave	min	max	stdev	ave	min	max	stdev	ave	min	max	stdev	ave	min	max	stdev
Peak time, min	2.9	2.3	3.8	0.47	3.4	2.7	3.8	0.35	3.5	2.8	4.0	0.40	3.0	2.7	4.0	0.34
Tail height (6min), mm	55	49	61	4.30	58	49	63	3.15	62	57	67	2.83	56	48	63	3.85
Number of samples	***10***				***26***				***8***				***16***			

	B1	B2			B1	B2	B3	B4	B1	B2	B3		B1	B2	B3	
BÜHLER EXTRACTION, %	74.9	72.1			73.7	73.1	73.5	73.0	73.7	73.0	73.8		74.1	73.5	73.3	
FLOUR																
Protein (12% mb), %	12.6	11.6			14.0	14.0	14.1	14.0	14.2	14.3	14.3		13.2	13.5	13.2	
Colour, KJ	-0.7	-0.6			-0.2	-0.7	-0.6	-0.7	-0.2	0.4	-0.8		-0.5	-0.9	-0.4	
FARINOGRAM																
Water absorption (14% mb), %	61.1	60.8			62.1	61.4	61.5	59.9	62.8	61.0	60.6		62.3	62.4	61.8	
Development time, min	5.0	3.8			6.0	6.2	7.2	9.4	7.7	7.9	7.7		4.8	5.5	6.0	
Stability, min	9.0	6.6			9.6	13.2	16.1	18.1	16.6	17.9	18.1		9.9	8.5	11.0	
Mixing Tolerance Index, BU	41	48			41	28	28	21	22	6	26		31	44	28	
EXTENSOGRAM (45 min pull)																
Area, cm2	110	116			117	141	133	160	146	179	145		118	133	112	
Maximum height, BU	400	430			425	490	455	505	410	510	440		405	440	400	
Extensibility, mm	187	186			188	203	202	217	245	237	226		205	212	197	
ALVEOGRAM																
Strength, cm2	41.6	37.0			49.7	45.7	45.9	54.6	54.6	62.1	50.3		45.9	45.0	40.8	
Stability (P), mm	75	76			79	73	69	68	75	78	69		81	80	76	
Distensibility (L), mm	128	108			129	133	143	173	165	168	159		129	121	122	
Configuration ratio (P/L)	0.59	0.70			0.62	0.55	0.48	0.39	0.46	0.46	0.43		0.63	0.66	0.62	
MIXOGRAM																
Peak time, min	2.4	2.8			3.0	3.1	3.1	3.5	2.8	3.2	3.0		2.3	2.5	2.4	
100g BAKING TEST																
Loaf volume, cm3	975	870			975	980	1005	1050	1035	1035	1030		945	950	970	
Evaluation	0	1			2	2	2	0	1	1	1		2	2	1	

SOUTH AFRICAN

SUMMER RAINFALL WHEAT (AND IRRIGATION)

Free State Province (Northern)

Free State Province (Eastern)

PRODUCTION REGION	(22) Free-State North-Western Region (Bothaville)	(23) Free-State North-Western Region (Bultfontein)	(25) Free State South-Western Region	(28) Free State Eastern Region
Intake silos	Allanridge Bothaville Mirage Odendaalsrus Schoonspruit Schuttesdraai	Bultfontein Losdoorns Protespan Tierfontein Wesselsbron Willemsrust	Bethlehem Clocolan De Wetsdorp Ficksburg Fouriesburg Marseilles Modderpoort Slabberts Tweespruit Westminster Zastron	Afrikaskop Ascent Cornelia Daniëlsrus Eeram Frankfort Harrismith Jim Fouché Kransfontein Memel Reitz Tweeling Villiers Vrede Warden Windfield

WHEAT	ave	min	max	stdev	ave	min	max	stdev	ave	min	max	stdev	ave	min	max	stdev
Protein (12% mb), %	15.05	12.07	19.71	2.65	14.06	12.50	15.17	0.85	14.00	10.41	16.89	1.48	14.85	12.10	16.49	1.25
Falling number, sec	400	356	431	26.74	409	280	524	65.44	375	331	462	28.37	332	244	433	42.79
1000 Kernel mass (13% mb), g	35.0	24.0	40.6	5.90	33.3	28.6	39.5	3.81	30.1	23.1	35.9	3.04	35.0	27.3	43.0	3.63
Hectolitre mass (dirty), kg/hl	75.4	70.8	77.1	2.41	77.0	73.0	80.2	1.82	76.2	65.9	80.5	3.36	76.4	72.5	81.7	1.95
Screenings (<1.8mm), %	2.14	1.06	4.14	1.17	2.18	1.18	4.16	0.91	2.74	1.05	8.71	1.83	1.56	0.58	3.44	0.77
Foreign matter, %	0.13	0.06	0.22	0.06	0.07	0.00	0.10	0.02	0.11	0.06	0.18	0.04	0.14	0.00	0.28	0.06
Combined deviations, %	3.29	1.92	5.24	1.20	2.66	1.36	4.50	0.97	3.09	1.73	10.69	2.35	2.50	1.07	4.36	0.73
Number of samples	***6***				***15***				***24***				***29***			

CULTIVARS					
cultivars with highest % occurrence	SST 806	28.2	19.3	3.0	9.5
	SST 876	25.0	12.5	3.4	4.8
	PAN 3377	18.0	10.3	2.4	12.6
	Elands	6.0	6.1	26.3	37.0
	Gariep	3.7	8.3	18.6	1.4
Number of samples		***6***	***15***	***24***	***29***

MIXOGRAM (Quadromat)	ave	min	max	stdev	ave	min	max	stdev	ave	min	max	stdev	ave	min	max	stdev
Peak time, min	2.8	2.5	3.0	0.26	3.0	2.7	3.4	0.23	3.4	2.5	5.2	0.57	3.5	1.8	4.3	0.55
Tail height (6min), mm	56	49	63	4.98	55	50	57	2.19	58	52	64	4.03	59	50	66	4.22
Number of samples	***6***				***15***				***24***				***29***			

	B1	**B3**	**B1**	**B2**	**B3**	**B4**	**B1**	**B2**	**B3**	**B1**	**B2**	**B3**	**B4**
BÜHLER EXTRACTION, %	73.8	74.6	73.6	75.1	72.7	72.0	73.9	73.2	73.5	75.5	74.7	74.2	73.3
FLOUR													
Protein (12% mb), %	14.6	12.6	12.8	13.3	13.9	14.6	12.7	12.2	13.7	13.2	14.5	14.0	14.2
Colour, KJ	-0.4	-0.5	-0.9	-1.0	-0.3	-0.6	-1.2	-1.3	-1.0	-0.4	0.9	0.4	-0.5
FARINOGRAM													
Water absorption (14% mb), %	63.8	61.1	63.0	61.6	62.8	62.2	61.3	60.9	61.6	62.6	62.5	62.4	60.9
Development time, min	8.2	5.7	4.8	7.9	6.5	6.0	5.5	4.7	5.5	5.5	6.9	6.7	5.9
Stability, min	15.4	8.8	10.4	11.5	9.0	11.9	8.7	7.8	9.6	11.2	15.0	14.3	14.5
Mixing Tolerance Index, BU	23	44	26	35	42	25	42	51	44	34	31	27	24
EXTENSOGRAM (45 min pull)													
Area, cm2	151	125	115	132	124	155	122	137	126	131	159	164	144
Maximum height, BU	450	410	410	445	400	465	425	460	405	435	500	490	485
Extensibility, mm	228	209	192	208	212	230	196	204	214	214	214	228	205
ALVEOGRAM													
Strength, cm2	56.0	40.2	46.8	47.7	48.2	50.3	44.8	44.6	47.4	49.5	55.2	53.4	50.2
Stability (P), mm	90	68	94	74	83	75	80	83	75	78	80	82	76
Distensibility (L), mm	142	146	105	161	133	152	121	113	141	153	147	140	149
Configuration ratio (P/L)	0.63	0.47	0.90	0.46	0.62	0.49	0.66	0.73	0.53	0.51	0.54	0.59	0.51
MIXOGRAM													
Peak time, min	2.5	2.4	2.5	2.3	2.6	2.7	2.7	3.0	2.9	2.4	3.0	2.9	3.0
100g BAKING TEST													
Loaf volume, cm3	1050	1010	910	1020	1005	1060	920	910	960	1030	1060	1000	1060
Evaluation	1	0	2	0	1	1	2	1	2	0	1	2	1

SOUTH AFRICAN

SUMMER RAINFALL WHEAT AND IRRIGATION

Mpumalanga

PRODUCTION REGION	(29) Mpumalanga Southern Region	(30) Mpumalanga Eastern Region	(32) Mpumalanga Western Region	(33) Mpumalanga Northern Region
Intake silos	Balfour Greylingstad Grootvlei Harvard Holmdene Leeuspruit Platrand Standerton Val	Amersfoort Badplaas Carolina Davel Ermelo Estancia Lothair Maizefield Mkondo Morgenzon Overvaal Panbult	Argent Dryden Endicott Elof Hawerklip Kendal Ogies	Driefontein Lydenburg Marble Hall Middelburg Stoffelberg Pan Arnot Wonderfontein

WHEAT	ave	min	max	stdev	ave	min	max	stdev	ave	min	max	stdev	ave	min	max	stdev
Protein (12% mb), %	15.53				13.51	12.37	16.46	1.97	13.35	12.01	14.27	1.19	11.57	9.88	13.23	0.86
Falling number, sec	336				291	268	326	25.01	400	354	424	40.13	408	345	564	51.94
1000 Kernel mass (13% mb), g	33.8				37.7	36.5	38.6	0.90	34.8	27.1	41.6	7.30	40.2	31.8	44.2	2.93
Hectolitre mass (dirty), kg/hl	76.0				75.9	73.8	77.7	1.64	75.7	68.3	79.5	6.44	80.2	73.9	82.6	2.15
Screenings (<1.8mm), %	0.81				1.42	1.09	2.04	0.42	3.67	0.46	9.86	5.36	1.81	0.65	3.98	1.02
Foreign matter, %	0.08				0.08	0.08	0.08	0.00	0.52	0.08	1.40	0.76	0.16	0.00	0.78	0.21
Combined deviations, %	1.43				2.75	1.85	3.48	0.71	5.52	1.16	14.12	7.45	2.75	0.73	6.56	1.65
Number of samples	***1***				***4***				***3***				***17***			

CULTIVARS					
	Elands	45.0			
cultivars	SST 806	20.0	31.5	44.1	25.4
with highest %	SST 876	9.0	63.5	20.7	31.3
occurrence	SST 825		3.0	24.1	9.8
	CRN 826			11.1	6.8
Number of samples		***1***	***4***	***3***	***17***

MIXOGRAM (Quadromat)	ave	min	max	stdev	ave	min	max	stdev	ave	min	max	stdev	ave	min	max	stdev
Peak time, min	3.3				2.9	2.5	3.4	0.38	2.3	1.8	2.8	0.50	2.5	2.0	3.2	0.38
Tail height (6min), mm	56				55	48	63	6.24	49	48	51	1.73	49	44	56	3.43
Number of samples	***1***				***4***				***3***				***17***			

BÜHLER EXTRACTION, %	**B2** 74.5				**B1** 72.3	**B2** 74.1		**B4** 76.6	**B1** 76.7				**B1** 77.0	**B2** 75.7	**B3** 76.3	
FLOUR																
Protein (12% mb), %	14.5				11.1	11.6		15.0	12.0				11.6	10.4	9.6	
Colour, KJ	0.7				-1.7	-2.1		-0.1	-1.7				-0.9	-1.7	-1.9	
FARINOGRAM																
Water absorption (14% mb), %	62.3				58.2	61.0		63.8	62.8				62.3	61.5	60.9	
Development time, min	8.2				4.3	2.5		9.1	4.2				4.0	4.0	3.0	
Stability, min	12.9				8.1	6.6		17.1	5.4				5.2	6.9	5.7	
Mixing Tolerance Index, BU	38				46	51		26	70				61	46	55	
EXTENSOGRAM (45 min pull)																
Area, cm2	135				127	161		161	97				84	87	77	
Maximum height, BU	405				430	500		475	310				305	330	300	
Extensibility, mm	225				208	221		231	213				189	181	173	
ALVEOGRAM																
Strength, cm2	44.2				31.5	40.7		63.0	30.9				31.0	33.5	27.1	
Stability (P), mm	70				52	66		91	63				72	77	75	
Distensibility (L), mm	142				162	145		146	142				111	104	84	
Configuration ratio (P/L)	0.49				0.32	0.46		0.63	0.44				0.65	0.74	0.89	
MIXOGRAM																
Peak time, min	2.8				2.8	2.7		3.2	1.8				2.0	2.4	2.3	
100g BAKING TEST																
Loaf volume, cm3	1060				880	950		1055	920				865	845	775	
Evaluation	1				0	0		2	0				1	0	0	

SOUTH AFRICAN

SUMMER RAINFALL WHEAT AND IRRIGATION
Gauteng and Limpopo Provinces

IRRIGATION
Kwazulu-Natal Province

PRODUCTION REGION	(34) Gauteng	(35) Limpopo Region	(36) KwaZulu-Natal
Intake silos	Bloekomspruit Bronkhorstspruit Glenroy Goeie Hoek Kaalfontein Middelvlei Nigel Oberholzer Raathsvlei	Alma Crecy Immerpan Lehau Naboomspruit Northam Nutfield Nylstroom Pienaarsrivier Pietersburg Potgietersrus Roedtan Settlers Tzaneen Vaalwater Warmbad	Bergville Bloedrivier Dannhauser Dundee Mizpah New Amalfi Paulpietersburg Vryheid Winterton

WHEAT

	ave	min	max	stdev	ave	min	max	stdev	ave	min	max	stdev
Protein (12% mb), %	12.40	11.38	13.16	0.90	11.40	8.81	13.72	1.41	12.84	11.31	15.05	1.06
Falling number, sec	437	381	483	44.16	384	322	439	31.77	408	359	474	36.43
1000 Kernel mass (13% mb), g	35.4	32.0	39.9	3.40	40.5	33.7	49.2	3.64	35.7	30.5	40.6	2.74
Hectolitre mass (dirty), kg/hl	78.9	76.8	80.7	1.53	79.9	77.6	82.0	1.24	77.4	74.9	78.8	1.65
Screenings (<1.8mm), %	1.78	0.90	2.30	0.53	1.91	0.41	3.49	0.80	2.10	1.26	3.64	0.88
Foreign matter, %	0.11	0.08	0.12	0.02	0.08	0.00	0.16	0.04	0.09	0.04	0.26	0.07
Combined deviations, %	2.67	1.90	3.44	0.61	2.81	0.94	5.13	1.17	2.95	1.80	4.36	0.85
Number of samples	***5***				***26***				***8***			

CULTIVARS

cultivars with highest % occurrence	SST 876	34.0	23.2	29.8
	SST 806	31.4	37.2	48.5
	PAN 3377	8.2		
	SST 822		17.8	2.8
	SST 825	4.0	8.1	7.4
Number of samples		***5***	***26***	***8***

MIXOGRAM (Quadromat)

	ave	min	max	stdev	ave	min	max	stdev	ave	min	max	stdev
Peak time, min	3.5	2.3	4.3	0.88	2.5	1.8	3.7	0.46	2.9	2.3	3.3	0.44
Tail height (6min), mm	54	51	58	2.51	49	40	57	4.49	53	47	61	3.99
Number of samples	***5***				***26***				***8***			

	B1	B2	B1	B2	B3	B4	B1	B2	B3
BÜHLER EXTRACTION, %	75.2	74.0	74.2	75.1	76.1	76.4	76.2	76.7	73.7

FLOUR

Protein (12% mb), %	11.8	11.1	11.9	10.6	9.7	8.8	11.5	10.8	12.1
Colour, KJ	-2.5	-0.7	-1.4	-1.7	-2.0	-2.3	-1.0	-1.4	-0.7
FARINOGRAM									
Water absorption (14% mb), %	60.7	59.9	63.2	63.1	61.8	60.0	60.4	60.8	59.7
Development time, min	5.3	2.7	4.3	4.5	4.2	2.1	6.4	3.8	4.7
Stability, min	7.5	14.3	7.7	6.8	6.2	4.2	11.4	5.3	8.9
Mixing Tolerance Index, BU	53	7	41	50	58	65	33	70	39
EXTENSOGRAM (45 min pull)									
Area, cm2	134	129	106	88	91	85	116	96	114
Maximum height, BU	460	545	380	345	390	315	455	310	385
Extensibility, mm	199	166	196	178	164	161	182	197	201
ALVEOGRAM									
Strength, cm2	37.3	43.7	41.4	34.6	33.5	25.5	40.8	28.3	36.2
Stability (P), mm	65	90	81	84	82	69	75	58	63
Distensibility (L), mm	146	100	123	98	95	92	128	132	151
Configuration ratio (P/L)	0.44	0.90	0.66	0.86	0.86	0.74	0.59	0.44	0.42
MIXOGRAM									
Peak time, min	2.3	3.6	2.3	2.0	2.4	2.4	2.7	2.1	2.6
100g BAKING TEST									
Loaf volume, cm3	965	825	880	840	820	795	940	910	965
Evaluation	0	1	1	0	0	0	0	0	0

WEIGHTED AVERAGE RESULTS FOR THE LAST THREE SEASONS

	2004/2005					2003/2004					2002/2003				
Region	**Protein (12% mb), %**	**FN, sec**	**Hlm, kg/hl**	**Mixo PT, min**	***n***	**Protein (12% mb), %**	**FN, sec**	**Hlm, kg/hl**	**Mixo PT, min**	***n***	**Protein (12% mb), %**	**FN, sec**	**Hlm, kg/hl**	**Mixo PT, min**	***n***
1	12.4	387	77.4	2.8	*3*	11.5	406	76.3	2.9	*4*	10.8	369	79.4	2.8	*4*
2	13.3	390	76.4	2.8	*19*	13.0	407	75.3	2.9	*24*	11.2	370	78.7	3.0	*33*
3	13.6	378	76.7	2.9	*62*	13.0	393	75.8	2.8	*36*	11.3	363	77.7	2.8	*88*
4	12.5	367	79.0	2.8	*51*	11.9	384	77.2	2.7	*23*	11.0	358	78.6	2.7	*32*
5	12.1	349	77.5	2.5	*40*	10.8	387	80.7	2.3	*30*	11.0	363	79.2	2.6	*27*
6	11.6	377	78.3	2.9	*21*	10.7	386	79.3	2.8	*17*	11.4	367	79.7	2.5	*26*
7	11.8	414	82.0	2.3	*1*	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	11.9	433	79.4	2.6	*16*	11.3	419	79.5	2.4	*19*	11.4	380	80.5	2.0	*14*
11	12.0	419	78.9	2.6	*11*	11.8	319	77.1	2.7	*31*	11.9	397	79.9	2.2	*22*
12	-	-	-	-	-	13.2	363	76.8	3.0	*3*	11.8	382	80.6	2.0	*3*
13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	13.2	390	76.7	2.6	*5*	13.5	379	74.5	3.4	*5*	12.3	346	80.0	2.4	*4*
15	13.2	368	79.2	2.5	*6*	-	-	-	-	-	11.2	311	79.4	2.5	*8*
16	-	-	-	-	-	12.3	385	74.0	2.2	*4*	12.3	350	80.4	1.9	*2*
17	10.9	381	80.5	2.5	*3*	12.1	370	77.5	2.7	*7*	11.7	327	77.9	2.1	*5*
18	11.2	381	78.7	3.0	*4*	13.2	367	79.6	3.2	*2*	12.4	397	82.7	2.3	*3*
19	11.6	376	78.0	2.6	*12*	12.9	365	78.5	2.6	*12*	11.4	360	80.8	2.3	*3*
20	11.1	388	79.7	2.9	*28*	11.8	348	77.3	3.3	*14*	11.2	400	79.5	2.9	*12*
21	13.4	366	77.7	2.9	*10*	14.6	335	77.0	3.3	*8*	12.4	345	78.2	3.0	*11*
22	15.1	400	75.4	2.8	*6*	13.1	300	75.7	3.1	*7*	12.9	317	79.1	2.4	*3*
23	14.1	409	77.0	3.0	*15*	13.0	371	77.6	2.9	*29*	12.0	332	79.3	2.3	*17*
24	14.8	375	76.2	3.0	*16*	13.6	358	75.6	3.0	*46*	11.6	330	78.3	3.0	*28*
25	14.0	375	76.2	3.4	*24*	13.4	308	76.9	2.9	*29*	11.8	294	77.2	3.9	*31*
26	15.0	371	76.0	3.4	*26*	14.6	318	76.8	2.9	*26*	11.9	341	78.8	3.4	*27*
27	15.7	348	75.8	3.5	*8*	14.6	364	77.6	2.6	*13*	12.0	302	77.7	3.5	*11*
28	14.9	332	76.4	3.5	*29*	14.9	339	77.0	2.6	*36*	12.1	302	77.2	3.7	*47*
29	15.5	336	76.0	3.3	*1*	-	-	-	-	-	-	-	-	-	-
30	13.5	291	75.9	2.9	*4*	13.3	334	78.9	2.6	*6*	13.3	318	76.8	2.6	*6*
31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	13.4	400	75.7	2.3	*3*	12.7	414	80.9	2.1	*3*	-	-	-	-	-
33	11.6	408	80.2	2.5	*17*	12.4	439	79.4	2.7	*5*	-	-	-	-	-
34	12.4	437	78.9	3.5	*5*	14.0	397	77.0	2.7	*6*	12.2	366	80.1	2.8	*1*
35	11.4	384	79.9	2.5	*26*	13.1	386	77.0	3.0	*19*	11.8	378	80.7	2.2	*4*
36	12.8	408	77.4	2.9	*8*	12.8	395	77.8	3.1	*8*	12.7	404	79.9	2.6	*8*
Ave.	**13.0**	**377**	**77.7**	**2.9**	***480***	**12.9**	**364**	**77.2**	**2.8**	***472***	**11.6**	**349**	**78.6**	**2.9**	***480***

BREAD WHEAT GRADING TABLE
2004/2005

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	-

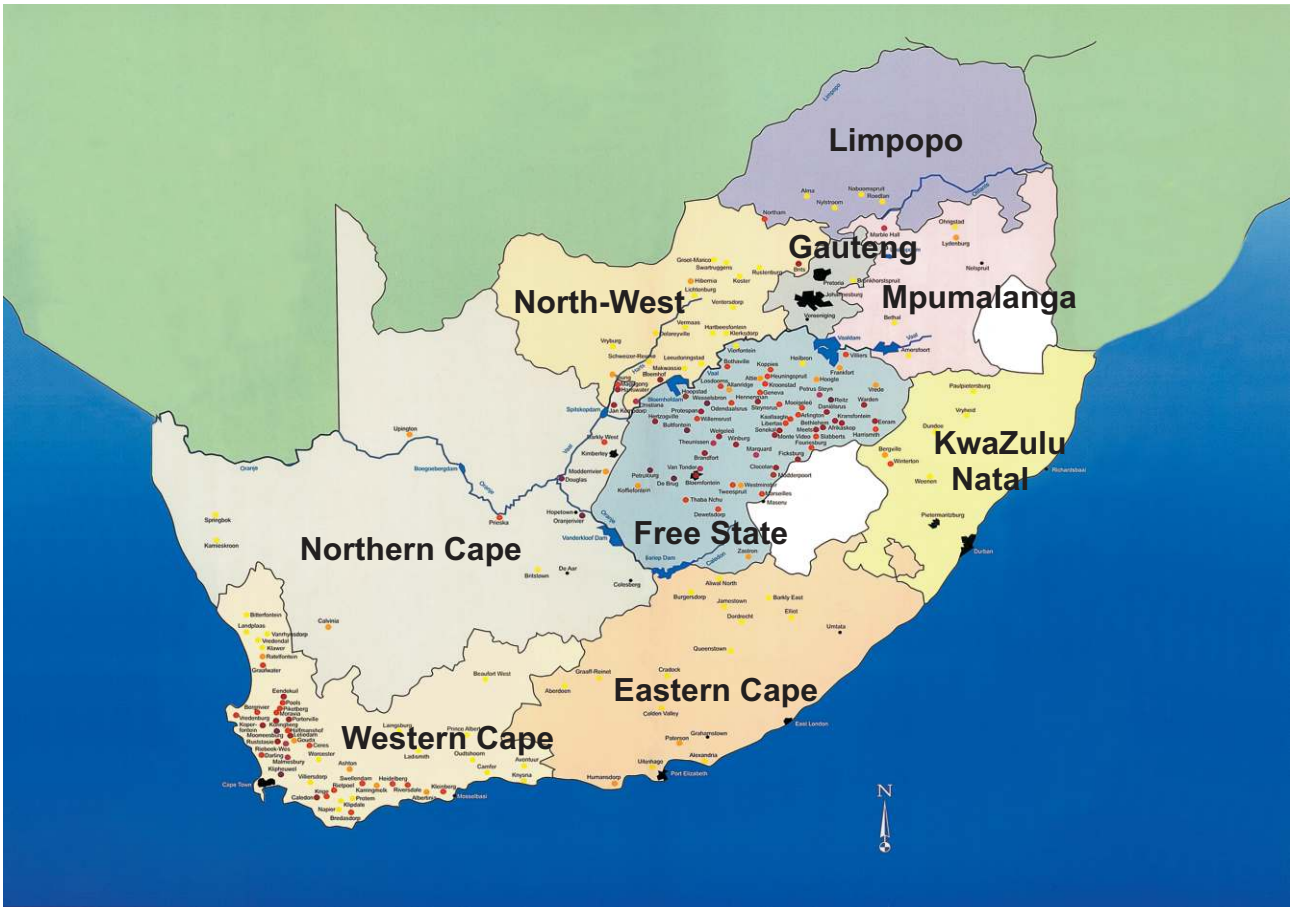
MYCOTOXIN RESULTS FOR THE 2004/2005 SEASON

Region	Class and Grade	Aflatoxin ppb *LOD < 5.0*	Deoxynivalenol ppm *LOD < 0.50*	Ochratoxin ppb *LOD = 0.47*
1	COW	< 5	0.79	0
2	B1	< 5	1.2	0
3	B3	< 5	1.1	0
4	B1	0	1.2	0
5	B2	< 5	0.84	< 0.47
6	B2	< 5	0.98	0
7	B2	0	0.58	0
10	B2	0	1.3	0
11	B2	0	1.2	0
14	UT	< 5	0.65	0
15	B1	< 5	1.5	0
17	B2	< 5	0.69	0
18	UT	0	1.7	0
19	B2	0	1.6	0
20	B4	0	0.64	0
21	B1	< 5	0.81	0
22	B3	< 5	1.2	0
23	B1	0	1.7	0
24	B1	< 5	1.3	0
25	B1	0	0.91	< 0.47
26	B3	0	1.2	0
27	B1	0	1.0	0
28	B1	0	0.71	0
29	B2	< 5	0.90	0
30	B1	< 5	1.2	0
32	B1	5	0.59	0
33	B1	< 5	1.8	0
34	B2	0	1.2	0
35	B1	< 5	0.59	< 0.47
36	B1	< 5	0.59	0
Average		***< 5***	***1.06***	***0***

Please note:

Limit of detection (LOD) means the lowest level that can be detected accurately by the fluorometer. Should the fluorometer give a reading above zero but lower than the limit of detection, the result is reported as < "limit of detection".

RSA WHEAT PRODUCTION AREAS



WHEAT SEED SOLD BY COMMERCIAL GRAIN SILO OWNERS TO WHEAT PRODUCERS FOR THE 2003 PLANTING SEASON

Cultivar	%	Cultivar	%
SST 88	25.26	SST 334	0.29
SST 57	18.69	SST 966	0.27
SST 876	9.03	Betta DN	0.26
SST 94	8.46	Pan 3490	0.20
SST 806	7.45	Limpopo	0.17
SST 015	6.05	Baviaans	0.16
Elands	4.55	SST 363	0.16
SST 822	4.00	Pan 3364	0.15
CRN 826	3.22	Pan 3191	0.14
SST 825	2.80	Caledon	0.13
Olifants	2.70	Komati	0.12
SST 65	1.55	Gariep	0.06
Kariega	1.40	SST 367	0.06
SST 399	0.86	Pan 3492	0.04
Inia	0.72	SST 333	0.03
Marico	0.35	SST 124	0.01
Pan 3377	0.35	Pan 3235	0.007
Pan 3349	0.30	SST 55	0.004
			100

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

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 Dispensation: Reference No. 21/4/1/1 and Serial No. 791 of 25 July 2003).

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. Hectolitre mass provides a measure of the bulk density of the 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 a inner diameter of 300 mm and an outer diameter of 302,5 mm.

Foreign matter means all material (including gravel, stones, turf and glass) excluding wheat, other grain and unthreshed ears.

Combined deviations is calculated as the sum of the percentages screenings, foreign matter, other grain and unthreshed ears as well as total damaged kernels (comprising heat damaged, immature, insect damaged and sprouted kernels.)

THOUSAND KERNEL MASS:

This is the weight in grams of one thousand kernels of grain and provides a measure of grain size and density. This determination does not include kernels that are broken or chipped.

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.

PROTEIN:

The Dumas combustion analysis technique is used, according to AACC method 46-30, 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 54-40A, 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 form 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 26-21A, 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 brighter the flour.

FARINOGRAPH:

AACC method 54-21, 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 that have 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.

EXTENSOGRAPH:

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 and 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: 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 10-10B, 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 characteristic of the 100 g Baking test:

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

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

MYCOTOXIN ANALYSES

Mycotoxins are 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 in accordance with the Vicam immunoaffinity column technique using the different Vicam instruction manuals for the different mycotoxins. Detection of the toxins was done on a fluorometer. Thirty samples of the 480 wheat crop samples were tested for aflatoxin, deoxynivalenol and ochratoxin.

Fungi	Toxin	Method reference
Aspergillus flavus	Aflatoxin	Vicam Aflatest Instruction Manual May 5, 1999
Aspergillus ochraceus and several species of Penicillium sp.	Ochratoxin	Vicam Ochratest Instruction Manual May 4, 1999
Fusarium graminearum	Deoxynivalenol (DON)	Vicam DON FQ Instruction Manual June 11, 2002

2003/2004 IMPORTED WHEAT QUALITY

2003/2004 Imported Wheat Quality Versus 2003/2004 RSA Crop 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**
Nr. of samples	***-***	***10***	***1***	***-***	***27***	***-***	***38***	***140***	***93***	***81***	***34***	***97***	***27***	***472***
WHEAT														
GRADING														
Protein (12% mb), %	-	11.36	10.93	-	11.49	-	11.44	13.39	12.37	12.66	12.23	13.27	12.68	12.91
Moisture, %	-	12.2	12.3	-	11.9	-	12.0	11.0	10.9	11.1	11.0	10.8	11.2	11.0
Falling number, sec	-	402	402	-	426	-	419	365	364	370	355	366	348	364
1000 Kernel mass (13% mb), g	-	33.3	33.9	-	31.7	-	32.2	34.3	34.1	34.2	33.7	31.1	32.9	33.5
Hlm (dirty), kg/hl	-	78.9	75.8	-	78.1	-	78.3	79.0	77.8	76.8	76.1	75.4	75.9	77.2
Screenings (<1,8mm), %	-	2.56	2.58	-	4.07	-	3.63	1.46	1.73	1.81	1.85	3.52	3.39	2.14
Gravel, stones, turf and glass, %	-	0.00	0.00	-	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Foreign matter, %	-	0.14	0.18	-	0.21	-	0.19	0.10	0.10	0.13	0.20	0.27	0.20	0.15
Other grain & unthreshed ears, %	-	0.17	0.24	-	0.21	-	0.20	0.21	0.28	0.31	0.36	0.71	0.66	0.38
Heat damaged kernels, %	-	0.03	0.00	-	0.02	-	0.02	0.00	0.01	0.01	0.00	0.01	0.44	0.03
Immature kernels, %	-	0.02	0.00	-	0.05	-	0.04	0.18	0.12	0.17	0.12	0.20	0.18	0.17
Insect damaged kernels, %	-	0.21	0.32	-	0.20	-	0.21	0.22	0.21	0.22	0.22	0.41	0.44	0.27
Heavily frost damaged kernels, %	-	0.00	0.00	-	0.04	-	0.03	0.00	0.01	0.00	0.00	0.01	0.02	0.00
Sprouted kernels, %	-	0.02	0.08	-	0.02	-	0.02	0.06	0.13	0.04	0.02	0.14	0.05	0.08
Total Damaged kernels, %	-	0.28	0.40	-	0.30	-	0.30	0.46	0.47	0.44	0.36	0.76	1.11	0.55
Combined deviations, %	-	3.15	3.40	-	4.78	-	4.32	2.23	2.58	2.69	2.77	5.26	5.36	3.22
Field fungi, %	-	0.21	0.24	-	0.21	-	0.21	0.23	0.30	0.36	0.32	0.41	0.50	0.33
Storage fungi, %	-	0.19	0.16	-	0.09	-	0.12	0.03	0.04	0.03	0.03	0.03	0.13	0.04
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 (Crotolaria 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	-	0	0	-	0	-	0	0	0	0	0	0	0	0
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**
Nr. of samples	***-***	***10***	***1***	***-***	***27***	***-***	***38***	***25***	***19***	***22***	***14***	***-***	***-***	***80***
BÜHLER EXTRACTION, %	**-**	72.7	72.9	-	72.0	-	72.2	75.0	74.7	74.1	73.3	-	-	74.4
FLOUR														
Colour, KJ	-	0.0	0.6	-	0.3	-	0.2	-0.6	-0.8	-0.6	-0.6	-	-	-0.6
FARINOGRAM														
Water absorption, %	-	60.7	60.7	-	59.9	-	60.1	62.4	61.4	61.0	60.8	-	-	61.5
Dev. Time, min	-	1.9	1.8	-	2.0	-	2.0	4.7	4.6	4.5	4.2	-	-	4.5
Stability, mm	-	5.1	5.2	-	6.2	-	5.9	6.6	6.9	6.8	6.6	-	-	6.7
Mixing tolerance index, BU	-	54	49	-	48	-	49	53	54	55	56	-	-	54

2003/2004 Imported Wheat Quality Versus 2003/2004 RSA Crop 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**
Nr. of samples	***-***	***10***	***1***	***-***	***27***	***-***	***38***	***25***	***19***	***22***	***14***	***-***	***-***	***80***
ALVEOGRAM														
Strength, cm²	-	33.7	32.6	-	37.5	-	36.3	43.5	40.7	40.0	38.8	-	-	41.1
Stability, mm	-	121	114	-	115	-	117	88	88	85	83	-	-	86
Distensibility, mm	-	45	48	-	56	-	53	116	106	109	106	-	-	110
P/L	-	2.76	2.35	-	2.20	-	2.36	0.77	0.88	0.85	0.90	-	-	0.84
EXTENSOGRAM														
Strength, cm²	-	90	93	-	94	-	93	103	97	97	90	-	-	98
Max. height, BU	-	469	490	-	475	-	474	365	373	364	344	-	-	363
Extensibility, mm	-	131	133	-	183	-	167	190	176	178	173	-	-	180
MIXOGRAM														
Peak time, min	-	4.2	4.5	-	4.3	-	4.2	62.7	61.6	62.0	61.7	-	-	62.1
Absorption, %	-	60.0	59.6	-	60.3	-	60.2	2.3	2.4	2.5	2.5	-	-	2.4
100g BAKING TEST														
Baking water absorption, %	-	60.1	59.6	-	60.3	-	60.2	62.7	61.6	61.9	61.8	-	-	62.1
Loaf volume, cm3	-	781	775	-	781	-	781	954	906	916	897	-	-	922
Evaluation	-	2	0	-	2	-	2	1	0	1	1	-	-	1

2003/2004 Imported Wheat Quality Versus 2003/2004 RSA Crop 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**
Nr. of samples	***44***	***5***	***5***	***-***	***10***	***-***	***64***	***140***	***93***	***81***	***34***	***97***	***27***	***472***
WHEAT														
GRADING														
Protein (12% mb), %	12.83	12.40	12.61	-	13.24	-	12.84	13.39	12.37	12.66	12.23	13.27	12.68	12.91
Moisture, %	10.0	10.2	10.0	-	10.6	-	10.1	11.0	10.9	11.1	11.0	10.8	11.2	11.0
Falling number, sec	509	518	515	-	465	-	504	365	364	370	355	366	348	364
1000 Kernel mass (13% mb), g	34.6	31.3	32.6	-	31.6	-	33.7	34.3	34.1	34.2	33.7	31.1	32.9	33.5
Hlm (dirty), kg/hl	79.7	78.4	77.1	-	77.1	-	79.0	79.0	77.8	76.8	76.1	75.4	75.9	77.2
Screenings (<1,8mm), %	1.71	1.39	1.73	-	3.47	-	1.96	1.46	1.73	1.81	1.85	3.52	3.39	2.14
Gravel, stones, turf and glass, %	0.00	0.00	0.00	-	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Foreign matter, %	0.15	0.20	0.75	-	0.42	-	0.25	0.10	0.10	0.13	0.20	0.27	0.20	0.15
Other grain & unthreshed ears, %	0.29	0.54	0.82	-	0.62	-	0.40	0.21	0.28	0.31	0.36	0.71	0.66	0.38
Heat damaged kernels, %	0.00	0.00	0.00	-	0.02	-	0.01	0.00	0.01	0.01	0.00	0.01	0.44	0.03
Immature kernels, %	0.01	0.00	0.00	-	0.01	-	0.01	0.18	0.12	0.17	0.12	0.20	0.18	0.17
Insect damaged kernels, %	0.02	0.02	0.06	-	0.10	-	0.04	0.22	0.21	0.22	0.22	0.41	0.44	0.27
Heavily frost damaged kernels, %	0.05	0.00	0.00	-	0.00	-	0.04	0.00	0.01	0.00	0.00	0.01	0.02	0.00
Sprouted kernels, %	0.00	0.00	0.00	-	0.00	-	0.00	0.06	0.13	0.04	0.02	0.14	0.05	0.08
Total Damaged kernels, %	0.03	0.02	0.06	-	0.12	-	0.05	0.46	0.47	0.44	0.36	0.76	1.11	0.55
Combined deviations, %	2.21	2.15	3.37	-	4.63	-	2.67	2.23	2.58	2.69	2.77	5.26	5.36	3.22
Field fungi, %	0.04	0.29	0.27	-	0.56	-	0.16	0.23	0.30	0.36	0.32	0.41	0.50	0.33
Storage fungi, %	0.01	0.03	0.02	-	0.06	-	0.02	0.03	0.04	0.03	0.03	0.03	0.13	0.04
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 (Crotolaria sp, Datura sp..)	0	0	0	-	0	-	0	0	0	0	0	0	0	0
Noxious seeds (Argemone mexicana..)	0	1	0	-	0	-	0	0	0	0	0	0	0	0
Live insects	0	0	0	-	0	-	0	0	0	0	0	0	0	0
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**
Nr. of samples	***44***	***5***	***5***	***-***	***10***	***-***	***64***	***25***	***19***	***22***	***14***	***-***	***-***	***80***
BÜHLER EXTRACTION, %	71.1	70.4	70.4	-	70.5	-	70.9	75.0	74.7	74.1	73.3	-	-	74.4
FLOUR														
Colour, KJ	-1.8	-1.8	-1.9	-	-1.0	-	-1.7	-0.6	-0.8	-0.6	-0.6	-	-	-0.6
FARINOGRAM														
Water absorption, %	64.2	63.1	63.5	-	63.0	-	63.9	62.4	61.4	61.0	60.8	-	-	61.5
Dev. Time, min	4.3	3.9	4.3	-	4.2	-	4.2	4.7	4.6	4.5	4.2	-	-	4.5
Stability, mm	8.8	9.1	7.7	-	7.3	-	8.5	6.6	6.9	6.8	6.6	-	-	6.7
Mixing tolerance index, BU	37	35	43	-	50	-	39	53	54	55	56	-	-	54

2003/2004 Imported Wheat Quality Versus 2003/2004 RSA Crop 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
Nr. of samples	*44*	*5*	*5*	*-*	*10*	*-*	*64*	*25*	*19*	*22*	*14*	*-*	*-*	*80*
ALVEOGRAM														
Strength, cm²	50.6	49.0	47.0	-	51.8	-	50.3	43.5	40.7	40.0	38.8	-	-	41.1
Stability, mm	130	121	121	-	118	-	126	88	88	85	83	-	-	86
Distensibility, mm	74	79	77	-	88	-	77	116	106	109	106	-	-	110
P/L	1.80	1.59	1.84	-	1.60	-	1.75	0.77	0.88	0.85	0.90	-	-	0.84
EXTENSOGRAM														
Strength, cm²	105	114	107	-	120	-	109	103	97	97	90	-	-	98
Max. height, BU	447	473	440	-	477	-	453	365	373	364	344	-	-	363
Extensibility, mm	163	167	163	-	176	-	165	190	176	178	173	-	-	180
MIXOGRAM														
Peak time, min	2.9	3.0	2.8	-	3.3	-	2.9	62.7	61.6	62.0	61.7	-	-	62.1
Absorption, %	62.0	61.7	61.8	-	62.7	-	62.1	2.3	2.4	2.5	2.5	-	-	2.4
100g BAKING TEST														
Baking water absorption, %	62.2	61.7	62.6	-	62.8	-	62.3	62.7	61.6	61.9	61.8	-	-	62.1
Loaf volume, cm3	872	880	884	-	896	-	877	954	906	916	897	-	-	922
Evaluation	1	1	1	-	2	-	1	1	0	1	1	-	-	1

2003/2004 Imported Wheat Quality Versus 2003/2004 RSA Crop 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**
Nr. of samples	***1***	***2***	***-***	***-***	***-***	***-***	***3***	***140***	***93***	***81***	***34***	***97***	***27***	***472***
WHEAT														
GRADING														
Protein (12% mb), %	12.18	11.97	-	-	-	-	12.04	13.39	12.37	12.66	12.23	13.27	12.68	12.91
Moisture, %	10.8	10.7	-	-	-	-	10.7	11.0	10.9	11.1	11.0	10.8	11.2	11.0
Falling number, sec	334	359	-	-	-	-	351	365	364	370	355	366	348	364
1000 Kernel mass (13% mb), g	45.2	36.5	-	-	-	-	39.4	34.3	34.1	34.2	33.7	31.1	32.9	33.5
Hlm (dirty), kg/hl	78.1	76.8	-	-	-	-	77.2	79.0	77.8	76.8	76.1	75.4	75.9	77.2
Screenings (<1,8mm), %	2.18	2.59	-	-	-	-	2.45	1.46	1.73	1.81	1.85	3.52	3.39	2.14
Gravel, stones, turf and glass, %	0.00	0.00	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Foreign matter, %	0.22	0.18	-	-	-	-	0.19	0.10	0.10	0.13	0.20	0.27	0.20	0.15
Other grain & unthreshed ears, %	0.94	0.28	-	-	-	-	0.50	0.21	0.28	0.31	0.36	0.71	0.66	0.38
Heat damaged kernels, %	0.00	0.00	-	-	-	-	0.00	0.00	0.01	0.01	0.00	0.01	0.44	0.03
Immature kernels, %	0.00	0.00	-	-	-	-	0.00	0.18	0.12	0.17	0.12	0.20	0.18	0.17
Insect damaged kernels, %	0.12	0.12	-	-	-	-	0.12	0.22	0.21	0.22	0.22	0.41	0.44	0.27
Heavily frost damaged kernels, %	2.12	0.61	-	-	-	-	1.11	0.00	0.01	0.00	0.00	0.01	0.02	0.00
Sprouted kernels, %	0.00	0.16	-	-	-	-	0.11	0.06	0.13	0.04	0.02	0.14	0.05	0.08
Total Damaged kernels, %	0.12	0.28	-	-	-	-	0.23	0.46	0.47	0.44	0.36	0.76	1.11	0.55
Combined deviations, %	3.46	3.33	-	-	-	-	3.37	2.23	2.58	2.69	2.77	5.26	5.36	3.22
Field fungi, %	0.78	0.56	-	-	-	-	0.63	0.23	0.30	0.36	0.32	0.41	0.50	0.33
Storage fungi, %	0.32	0.24	-	-	-	-	0.27	0.03	0.04	0.03	0.03	0.03	0.13	0.04
Ergot, %	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	0	0	0	0	0	0
Noxious seeds (Argemone mexicana..)	0	0	-	-	-	-	0	0	0	0	0	0	0	0
Live insects	0	0	-	-	-	-	0	0	0	0	0	0	0	0
Undesirable odour	No	No	-	-	-	-	No	No	No	No	No	No	No	No
	B1	**B2**	**B3**	**B4**	**UT**	**COW**	**Average**	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**Average**
Nr. of samples	***1***	***2***	***-***	***-***	***-***	***-***	***3***	***25***	***19***	***22***	***14***	***-***	***-***	***80***
BÜHLER EXTRACTION, %	75.3	73.2	-	-	-	-	73.9	75.0	74.7	74.1	73.3	-	-	74.4
FLOUR														
Colour, KJ	1.8	1.5	-	-	-	-	1.6	-0.6	-0.8	-0.6	-0.6	-	-	-0.6
FARINOGRAM														
Water absorption, %	64.5	60.9	-	-	-	-	62.1	62.4	61.4	61.0	60.8	-	-	61.5
Dev. Time, min	3.5	2.8	-	-	-	-	3.0	4.7	4.6	4.5	4.2	-	-	4.5
Stability, mm	4.4	6.9	-	-	-	-	6.0	6.6	6.9	6.8	6.6	-	-	6.7
Mixing tolerance index, BU	73	48	-	-	-	-	56	53	54	55	56	-	-	54

2003/2004 Imported Wheat Quality Versus 2003/2004 RSA Crop 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**
Nr. of samples	***1***	***2***	***-***	***-***	***-***	***-***	***3***	***25***	***19***	***22***	***14***	***-***	***-***	***80***
ALVEOGRAM														
Strength, cm²	36.2	40.2	-	-	-	-	38.9	43.5	40.7	40.0	38.8	-	-	41.1
Stability, mm	120	106	-	-	-	-	111	88	88	85	83	-	-	86
Distensibility, mm	57	75	-	-	-	-	69	116	106	109	106	-	-	110
P/L	2.10	1.54	-	-	-	-	1.72	0.77	0.88	0.85	0.90	-	-	0.84
EXTENSOGRAM														
Strength, cm²	60	117	-	-	-	-	89	103	97	97	90	-	-	98
Max. height, BU	260	480	-	-	-	-	370	365	373	364	344	-	-	363
Extensibility, mm	157	171	-	-	-	-	164	190	176	178	173	-	-	180
MIXOGRAM														
Peak time, min	2.7	3.3	-	-	-	-	3.1	62.7	61.6	62.0	61.7	-	-	62.1
Absorption, %	60.7	60.7	-	-	-	-	60.7	2.3	2.4	2.5	2.5	-	-	2.4
100g BAKING TEST														
Baking water absorption, %	60.7	60.7	-	-	-	-	60.7	62.7	61.6	61.9	61.8	-	-	62.1
Loaf volume, cm3	765	810	-	-	-	-	795	954	906	916	897	-	-	922
Evaluation	3	1	-	-	-	-	2	1	0	1	1	-	-	1

2003/2004 Imported Wheat Quality Versus 2003/2004 RSA Crop Quality

Country of origin	United Kingdom							RSA Crop Average						
Class and Grade bread wheat	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**Average**	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**Average**
Nr. of samples	**-**	**-**	**-**	**-**	**-**	***4***	***4***	***140***	***93***	***81***	***34***	***97***	***27***	*472*
WHEAT														
GRADING														
Protein (12% mb), %	-	-	-	-	-	10.46	10.46	13.39	12.37	12.66	12.23	13.27	12.68	12.91
Moisture, %	-	-	-	-	-	13.0	13.0	11.0	10.9	11.1	11.0	10.8	11.2	11.0
Falling number, sec	-	-	-	-	-	266	266	365	364	370	355	366	348	364
1000 Kernel mass (13% mb), g	-	-	-	-	-	46.2	46.2	34.3	34.1	34.2	33.7	31.1	32.9	33.5
Hlm (dirty), kg/hl	-	-	-	-	-	75.4	75.4	79.0	77.8	76.8	76.1	75.4	75.9	77.2
Screenings (<1,8mm), %	-	-	-	-	-	1.85	1.85	1.46	1.73	1.81	1.85	3.52	3.39	2.14
Gravel, stones, turf and glass, %	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Foreign matter, %	-	-	-	-	-	0.17	0.17	0.10	0.10	0.13	0.20	0.27	0.20	0.15
Other grain & unthreshed ears, %	-	-	-	-	-	0.59	0.59	0.21	0.28	0.31	0.36	0.71	0.66	0.38
Heat damaged kernels, %	-	-	-	-	-	0.25	0.25	0.00	0.01	0.01	0.00	0.01	0.44	0.03
Immature kernels, %	-	-	-	-	-	0.00	0.00	0.18	0.12	0.17	0.12	0.20	0.18	0.17
Insect damaged kernels, %	-	-	-	-	-	0.04	0.04	0.22	0.21	0.22	0.22	0.41	0.44	0.27
Heavily frost damaged kernels, %	-	-	-	-	-	1.85	1.85	0.00	0.01	0.00	0.00	0.01	0.02	0.00
Sprouted kernels, %	-	-	-	-	-	0.37	0.37	0.06	0.13	0.04	0.02	0.14	0.05	0.08
Total Damaged kernels, %	-	-	-	-	-	0.66	0.66	0.46	0.47	0.44	0.36	0.76	1.11	0.55
Combined deviations, %	-	-	-	-	-	3.26	3.26	2.23	2.58	2.69	2.77	5.26	5.36	3.22
Field fungi, %	-	-	-	-	-	1.51	1.51	0.23	0.30	0.36	0.32	0.41	0.50	0.33
Storage fungi, %	-	-	-	-	-	2.15	2.15	0.03	0.04	0.03	0.03	0.03	0.13	0.04
Ergot, %	-	-	-	-	-	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	0	0	0	0	0
Noxious seeds (Argemone mexicana..)	-	-	-	-	-	0	0	0	0	0	0	0	0	0
Live insects	-	-	-	-	-	0	0	0	0	0	0	0	0	0
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**
Nr. of samples	**-**	**-**	**-**	**-**	**-**	***4***	***4***	***25***	***19***	***22***	***14***	**-**	**-**	***80***
BÜHLER EXTRACTION, %	-	-	-	-	-	74.8	74.8	75.0	74.7	74.1	73.3	-	-	74.4
FLOUR														
Colour, KJ	-	-	-	-	-	0.7	0.7	-0.6	-0.8	-0.6	-0.6	-	-	-0.6
FARINOGRAM														
Water absorption, %	-	-	-	-	-	55.8	55.8	62.4	61.4	61.0	60.8	-	-	61.5
Dev. Time, min	-	-	-	-	-	1.8	1.8	4.7	4.6	4.5	4.2	-	-	4.5
Stability, mm	-	-	-	-	-	3.0	3.0	6.6	6.9	6.8	6.6	-	-	6.7
Mixing tolerance index, BU	-	-	-	-	-	102	102	53	54	55	56	-	-	54

2003/2004 Imported Wheat Quality Versus 2003/2004 RSA Crop Quality

Country of origin	United Kingdom							RSA Crop Average						
Class and Grade bread wheat	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**Average**	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**Average**
Nr. of samples	*-*	*-*	*-*	*-*	*-*	*4*	*4*	*25*	*19*	*22*	*14*	*-*	*-*	*80*
ALVEOGRAM														
Strength, cm²	-	-	-	-	-	16.8	16.8	43.5	40.7	40.0	38.8	-	-	41.1
Stability, mm	-	-	-	-	-	54	54	88	88	85	83	-	-	86
Distensibility, mm	-	-	-	-	-	75	75	116	106	109	106	-	-	110
P/L	-	-	-	-	-	0.85	0.85	0.77	0.88	0.85	0.90	-	-	0.84
EXTENSOGRAM														
Strength, cm²	-	-	-	-	-	48	48	103	97	97	90	-	-	98
Max. height, BU	-	-	-	-	-	245	245	365	373	364	344	-	-	363
Extensibility, mm	-	-	-	-	-	129	129	190	176	178	173	-	-	180
MIXOGRAM														
Peak time, min	-	-	-	-	-	2.5	2.5	62.7	61.6	62.0	61.7	-	-	62.1
Absorption, %	-	-	-	-	-	59.0	59.0	2.3	2.4	2.5	2.5	-	-	2.4
100g BAKING TEST														
Baking water absorption, %	-	-	-	-	-	59.0	59.0	62.7	61.6	61.9	61.8	-	-	62.1
Loaf volume, cm3	-	-	-	-	-	726	726	954	906	916	897	-	-	922
Evaluation	-	-	-	-	-	1	1	1	0	1	1	-	-	1

2003/2004 Imported Wheat Quality Versus 2003/2004 RSA Crop 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**
Nr. of samples	***13***	***9***	***-***	***-***	***28***	***10***	***60***	***140***	***93***	***81***	***34***	***97***	***27***	***472***
WHEAT														
GRADING														
Protein (12% mb), %	13.34	11.64	-	-	12.07	13.00	12.44	13.39	12.37	12.66	12.23	13.27	12.68	12.91
Moisture, %	11.6	12.0	-	-	11.4	11.4	11.6	11.0	10.9	11.1	11.0	10.8	11.2	11.0
Falling number, sec	421	410	-	-	463	438	442	365	364	370	355	366	348	364
1000 Kernel mass (13% mb), g	32.3	31.3	-	-	29.2	29.9	30.3	34.3	34.1	34.2	33.7	31.1	32.9	33.5
Hlm (dirty), kg/hl	78.8	78.1	-	-	77.8	77.5	78.0	79.0	77.8	76.8	76.1	75.4	75.9	77.2
Screenings (<1,8mm), %	2.55	2.78	-	-	3.93	4.41	3.54	1.46	1.73	1.81	1.85	3.52	3.39	2.14
Gravel, stones, turf and glass, %	0.00	0.00	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Foreign matter, %	0.17	0.19	-	-	0.23	0.22	0.21	0.10	0.10	0.13	0.20	0.27	0.20	0.15
Other grain & unthreshed ears, %	0.41	0.25	-	-	0.35	0.59	0.39	0.21	0.28	0.31	0.36	0.71	0.66	0.38
Heat damaged kernels, %	0.06	0.03	-	-	0.06	0.12	0.06	0.00	0.01	0.01	0.00	0.01	0.44	0.03
Immature kernels, %	0.08	0.03	-	-	0.02	0.05	0.04	0.18	0.12	0.17	0.12	0.20	0.18	0.17
Insect damaged kernels, %	0.44	0.23	-	-	0.53	0.65	0.49	0.22	0.21	0.22	0.22	0.41	0.44	0.27
Heavily frost damaged kernels, %	0.10	0.00	-	-	0.07	0.01	0.05	0.00	0.01	0.00	0.00	0.01	0.02	0.00
Sprouted kernels, %	0.22	0.09	-	-	0.09	0.10	0.12	0.06	0.13	0.04	0.02	0.14	0.05	0.08
Total Damaged kernels, %	0.80	0.37	-	-	0.71	0.92	0.71	0.46	0.47	0.44	0.36	0.76	1.11	0.55
Combined deviations, %	3.93	3.60	-	-	5.23	6.14	4.85	2.23	2.58	2.69	2.77	5.26	5.36	3.22
Field fungi, %	0.38	0.54	-	-	0.42	0.70	0.48	0.23	0.30	0.36	0.32	0.41	0.50	0.33
Storage fungi, %	0.11	0.13	-	-	0.08	0.13	0.10	0.03	0.04	0.03	0.03	0.03	0.13	0.04
Ergot, %	0.00	0.00	-	-	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Noxious seeds (Crotolaria 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	0	0	-	-	0	0	0	0	0	0	0	0	0	0
Undesirable odour	No	No	-	-	No	No	No	No	No	No	No	No	No	No
	B1	**B2**	**B3**	**B4**	**UT**	**B4**	**Average**	**B1**	**B2**	**B3**	**B4**	**UT**	**COW**	**Average**
Nr. of samples	***44***	***5***	***-***	***-***	***10***	***-***	***64***	***25***	***19***	***22***	***14***	***-***	***-***	***80***
BÜHLER EXTRACTION, %	72.9	72.8	-	-	71.4	72.5	72.1	75.0	74.7	74.1	73.3	-	-	74.4
FLOUR														
Colour, KJ	0.7	1.8	-	-	1.0	1.4	1.1	-0.6	-0.8	-0.6	-0.6	-	-	-0.6
FARINOGRAM														
Water absorption, %	62.2	60.2	-	-	58.6	61.2	60.1	62.4	61.4	61.0	60.8	-	-	61.5
Dev. Time, min	3.7	2.0	-	-	2.4	3.9	2.9	4.7	4.6	4.5	4.2	-	-	4.5
Stability, mm	8.4	7.8	-	-	7.9	8.7	8.1	6.6	6.9	6.8	6.6	-	-	6.7
Mixing tolerance index, BU	48	44	-	-	42	49	45	53	54	55	56	-	-	54

2003/2004 Imported Wheat Quality Versus 2003/2004 RSA Crop 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
Nr. of samples	*13*	*9*	*-*	*-*	*28*	*10*	*60*	*25*	*19*	*22*	*14*	*-*	*-*	*80*
ALVEOGRAM														
Strength, cm²	44.6	41.8	-	-	42.6	47.1	43.6	43.5	40.7	40.0	38.8	-	-	41.1
Stability, mm	113	115	-	-	99	113	107	88	88	85	83	-	-	86
Distensibility, mm	76	65	-	-	81	79	77	116	106	109	106	-	-	110
P/L	1.62	1.85	-	-	1.26	1.56	1.47	0.77	0.88	0.85	0.90	-	-	0.84
EXTENSOGRAM														
Strength, cm²	98	99	-	-	116	102	107	103	97	97	90	-	-	98
Max. height, BU	406	418	-	-	521	391	460	365	373	364	344	-	-	363
Extensibility, mm	162	148	-	-	155	170	157	190	176	178	173	-	-	180
MIXOGRAM														
Peak time, min	3.3	3.9	-	-	4.0	3.7	3.8	62.7	61.6	62.0	61.7	-	-	62.1
Absorption, %	62.3	60.5	-	-	60.9	57.3	60.5	2.3	2.4	2.5	2.5	-	-	2.4
100g BAKING TEST														
Baking water absorption, %	62.4	60.5	-	-	60.9	62.5	61.3	62.7	61.6	61.9	61.8	-	-	62.1
Loaf volume, cm3	860	816	-	-	862	889	857	954	906	916	897	-	-	922
Evaluation	2	1	-	-	0	1	1	1	0	1	1	-	-	1