

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

PRODUCTION REGION	(1) Namaqualand					(2) Swartland Western Region						
	Intake silos					Bergrivier Darling Koperfontein Vredenburg						
<b>WHEAT</b>												
	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>		<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>			
Protein (12% mb), %	11.5	9.4	13.4	1.8		10.6	9.2	13.6	0.9			
Falling number, sec	397	363	421	20.7		374	303	407	23.1			
1000 Kernel mass (13% mb), g	42.1	37.7	48.9	4.8		36.5	29.0	41.0	2.4			
Hectolitre mass (dirty), kg/hl	77.4	75.6	79.2	1.2		75.0	70.1	77.8	1.8			
Screenings (<1.8mm), %	1.7	1.0	2.6	0.5		3.2	2.0	20.2	3.7			
Total damaged kernels, %	0.5	0.4	0.7	0.1		0.2	0.0	0.6	0.1			
<b>Number of samples</b>	<b>6</b>					<b>23</b>						
<b>CULTIVARS</b>												
	SST 015				43.2	SST 027				44.5		
cultivars	SST 027				16.2	SST 88				27.4		
with highest %	SST 035				12.7	SST 015				15.2		
occurrence	SST 88				12.0	SST 57				9.8		
	SST 57				8.8	SST 035				2.0		
<b>Number of samples</b>	<b>6</b>					<b>23</b>						
<b>MIXOGRAM (Quadromat)</b>												
	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>		<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>			
Peak time, min	2.7	2.2	3.3	0.5		3.2	2.5	3.7	0.3			
Tail height (6min), mm	48	44	51	3.2		44	40	47	2.1			
<b>Number of samples</b>	<b>6</b>					<b>23</b>						
<b>BÜHLER EXTRACTION, %</b>												
	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>UT</b>	<b>COW</b>	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>UT</b>	<b>COW</b>
	74.7	73.8		73.3				73.6	74.7	73.3	73.4	
<b>FLOUR</b>												
Protein (12% mb), %	12.7	10.9		8.5			10.5	9.6	8.8	9.1		
Colour, KJ	-2.5	-2.2		-2.9			-0.9	-2.3	-2.6	-2.8		
<b>FARINOGRAM</b>												
Water absorption (14% mb), %	62.6	60.6		57.7			59.4	58.1	57.1	57.2		
Development time, min	5.2	3.8		1.5			2.8	2.2	1.8	1.8		
Stability, min	12.2	7.5		4.5			6.8	6.3	4.3	4.7		
Mixing tolerance index, BU	30	43		56			41	42	58	57		
<b>EXTENSOGRAM (45 min pull)</b>												
Area, cm2	110	85		83			68	82	72	79		
Maximum height, BU	375	330		395			315	385	360	370		
Extensibility, mm	206	180		143			145	144	136	146		
<b>ALVEOGRAM</b>												
Strength (S), cm2	48.8	43.7		33.3			34.6	37.6	31.0	31.8		
Stability (P), mm	82	91		82			84	82	77	79		
Distensibility (L), mm	136	110		84			93	100	87	82		
Configuration ratio (P/L)	0.60	0.83		0.98			0.89	0.83	0.88	0.96		
<b>MIXOGRAM</b>												
Peak time, min	2.2	2.8		2.9			2.8	3.2	3.5	3.0		
<b>100g BAKING TEST</b>												
Loaf volume, cm3	890	830		735			725	780	705	745		
Evaluation	2	1		0			4	0	1	0		

# RHEOLOGICAL GRAPHS PER PRODUCTION REGION



**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								
<b>WHEAT</b>	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>		<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>					
Protein (12% mb), %	10.4	8.7	12.6	0.9		10.5	8.7	14.3	1.1					
Falling number, sec	373	316	421	22.5		366	322	410	24.0					
1000 Kernel mass (13% mb), g	38.5	33.0	42.6	2.0		38.1	33.2	44.3	2.8					
Hectolitre mass (dirty), kg/hl	77.8	74.3	81.0	1.6		78.1	74.5	81.8	1.9					
Screenings (<1.8mm), %	1.0	0.1	3.4	1.0		1.4	0.2	3.4	1.0					
Total damaged kernels, %	0.4	0.0	3.7	0.5		0.3	0.0	1.0	0.3					
<b>Number of samples</b>	<b>78</b>					<b>35</b>								
<b>CULTIVARS</b>														
	SST 027 40.5					SST 027 41.5								
cultivars	SST 88 23.4					SST 88 22.5								
with highest %	SST 015 22.8					SST 015 18.5								
occurrence	SST 57 8.6					SST 57 12.8								
	SST 65 1.5					SST 035 2.3								
<b>Number of samples</b>	<b>78</b>					<b>35</b>								
<b>MIXOGRAM (Quadromat)</b>	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>		<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>					
Peak time, min	3.0	2.1	4.2	0.4		3.0	2.3	3.8	0.4					
Tail height (6min), mm	46	38	53	2.9		45	40	52	2.9					
<b>Number of samples</b>	<b>78</b>					<b>35</b>								
<b>BÜHLER EXTRACTION, %</b>	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>UT</b>	<b>COW</b>	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>UT</b>	<b>COW</b>		
	74.4	74.4	74.5	74.0	74.5		74.2	74.4	74.2	74.6	74.5			
<b>FLOUR</b>														
Protein (12% mb), %	12.1	10.8	9.6	8.6	8.4		11.8	10.7	9.4	8.3	7.7			
Colour, KJ	-2.5	-2.8	-2.7	-3.0	-3.1		-2.3	-2.9	-2.9	-3.0	-2.8			
<b>FARINOGRAM</b>														
Water absorption (14% mb), %	61.1	58.7	58.9	58.5	56.4		59.4	58.4	57.8	57.6	57.3			
Development time, min	4.5	4.0	1.8	1.8	1.9		5.2	4.2	2.3	1.8	1.3			
Stability, min	9.4	8.7	5.4	5.3	5.5		10.5	8.3	6.8	4.9	3.0			
Mixing tolerance index, BU	29	33	50	50	52		29	37	36	56	68			
<b>EXTENSOGRAM (45 min pull)</b>														
Area, cm <sup>2</sup>	105	96	79	71	91		105	112	100	77	77			
Maximum height, BU	380	400	460	365	420		405	425	410	400	410			
Extensibility, mm	193	166	155	135	151		182	184	166	138	128			
<b>ALVEOGRAM</b>														
Strength (S), cm <sup>2</sup>	36.5	43.7	36.1	32.7	28.7		45.6	39.9	33.5	29.7	30.6			
Stability (P), mm	87	79	86	88	74		85	75	77	82	87			
Distensibility (L), mm	122	123	91	79	83		120	127	99	73	69			
Configuration ratio (P/L)	0.71	0.65	0.94	1.11	0.89		0.71	0.59	0.78	1.12	1.25			
<b>MIXOGRAM</b>														
Peak time, min	2.5	2.8	2.8	2.8	3.3		2.8	2.8	2.8	2.9	3.0			
<b>100g BAKING TEST</b>														
Loaf volume, cm <sup>3</sup>	850	860	755	700	695		800	840	735	675	655			
Evaluation	2	0	1	1	0		3	0	1	1	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  
WINTER RAINFALL WHEAT  
Western Cape Province**

PRODUCTION REGION	(5) Rüens Western Region					(6) Rüens Eastern Region						
	Intake silos											
	Bredasdorp Caledon Klipdale Krige Napier Protém Rietpoel Villiersdorp					Albertinia Ashton Camfer Heidelberg Karringmelksrivier Kleinberg Protém Riversdal Swellendam						
<b>WHEAT</b>	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>		<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>			
Protein (12% mb), %	11.0	9.6	12.8	1.0		10.5	8.8	12.2	0.9			
Falling number, sec	370	344	390	13.0		362	291	413	23.3			
1000 Kernel mass (13% mb), g	40.9	38.4	43.5	1.4		40.9	35.8	46.5	2.5			
Hectolitre mass (dirty), kg/hl	78.7	77.7	80.4	0.8		78.5	75.8	79.9	1.2			
Screenings (<1.8mm), %	1.8	0.7	2.1	0.4		1.8	0.5	3.5	0.8			
Total damaged kernels, %	0.1	0.0	0.4	0.2		0.3	0.0	0.8	0.2			
<b>Number of samples</b>	<b>15</b>					<b>34</b>						
<b>CULTIVARS</b>												
	SST 027				33.4	SST 027				31.3		
cultivars	SST 88				25.3	SST 88				30.9		
with highest %	SST 015				24.1	SST 015				27.0		
occurrence	SST 57				12.9	SST 57				6.9		
	PAN 3408				2.0	SST 035				2.0		
<b>Number of samples</b>	<b>15</b>					<b>34</b>						
<b>MIXOGRAM (Quadromat)</b>	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>		<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>			
Peak time, min	2.5	2.3	2.8	0.2		2.8	2.4	3.5	0.2			
Tail height (6min), mm	48	42	55	3.4		47	43	51	2.1			
<b>Number of samples</b>	<b>15</b>					<b>34</b>						
<b>BÜHLER EXTRACTION, %</b>	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>UT</b>	<b>COW</b>	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>UT</b>	<b>COW</b>
	75.3	75.0	75.4	74.8			74.1	74.9	75.0	75.4	74.9	
<b>FLOUR</b>												
Protein (12% mb), %	12.4	10.7	9.8	8.6			11.7	10.8	9.8	8.8	8.6	
Colour, KJ	-2.4	-2.5	-2.6	-2.4			-2.5	-2.3	-2.5	-2.2	-2.4	
<b>FARINOGRAM</b>												
Water absorption (14% mb), %	62.2	60.1	59.3	58.5			61.4	60.1	59.3	58.1	58.0	
Development time, min	4.8	2.2	2.8	2.2			2.4	3.5	2.7	1.7	2.2	
Stability, min	8.3	7.1	6.3	5.0			8.0	7.4	6.9	5.7	5.9	
Mixing tolerance index, BU	33	32	48	58			29	38	35	46	45	
<b>EXTENSOGRAM (45 min pull)</b>												
Area, cm2	123	93	93	65			98	90	85	70	81	
Maximum height, BU	395	350	365	320			360	360	385	360	360	
Extensibility, mm	210	185	172	139			193	171	150	135	153	
<b>ALVEOGRAM</b>												
Strength (S), cm2	46.2	36.1	33.9	30.3			42.7	39.4	35.3	32.0	31.3	
Stability (P), mm	90	75	79	83			90	85	85	82	80	
Distensibility (L), mm	122	117	101	79			108	109	94	85	86	
Configuration ratio (P/L)	0.73	0.64	0.78	1.05			0.83	0.79	0.91	0.97	0.92	
<b>MIXOGRAM</b>												
Peak time, min	2.2	2.4	2.4	2.8			2.3	2.8	2.6	2.8	2.7	
<b>100g BAKING TEST</b>												
Loaf volume, cm3	910	800	775	710			875	810	730	725	725	
Evaluation	1	1	0	0			1	1	2	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  
IRRIGATION WHEAT  
Vaal and Orange river area**

PRODUCTION REGION	(10) Griqualand - West					(11) Vaalharts						
	Intake silos					Barkly-Wes Hartswater Jan Kemp Magogong Taung						
<b>WHEAT</b>	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>		<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>			
Protein (12% mb), %	11.0	9.6	12.4	0.8		11.3	10.2	12.1	0.6			
Falling number, sec	413	371	497	31.5		388	344	423	25.8			
1000 Kernel mass (13% mb), g	39.8	32.2	42.7	2.5		36.7	34.5	39.5	1.5			
Hectolitre mass (dirty), kg/hl	79.4	77.2	81.5	1.0		78.2	75.6	79.5	1.5			
Screenings (<1.8mm), %	1.3	0.2	7.3	1.6		3.0	2.3	4.2	0.6			
Total damaged kernels, %	0.4	0.1	0.8	0.2		0.8	0.1	3.1	0.9			
<b>Number of samples</b>	<b>17</b>					<b>9</b>						
<b>CULTIVARS</b>												
cultivars	CRN 826		32.2			CRN 826		83.1				
with highest % occurrence	SST 806		26.4			SST 806		7.2				
	PAN 3434		14.2			Duzi		3.1				
	Duzi		8.8			Krokodil		1.9				
	SST 876		8.1			SST 876		1.4				
<b>Number of samples</b>	<b>17</b>					<b>9</b>						
<b>MIXOGRAM (Quadromat)</b>	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>		<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>			
Peak time, min	2.5	2.0	2.8	0.2		2.4	2.2	2.7	0.2			
Tail height (6min), mm	46	39	52	3.0		50	45	55	3.4			
<b>Number of samples</b>	<b>17</b>					<b>9</b>						
<b>BÜHLER EXTRACTION, %</b>	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>UT</b>	<b>COW</b>	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>UT</b>	<b>COW</b>
	76.0	76.9	76.9	77.9				77.0			76.6	
<b>FLOUR</b>												
Protein (12% mb), %	12.0	11.1	10.1	8.9			10.9				11.4	
Colour, KJ	-2.2	-2.5	-3.0	-3.0			-2.3				-2.1	
<b>FARINOGRAM</b>												
Water absorption (14% mb), %	62.2	61.5	58.8	57.8			61.1				61.7	
Development time, min	4.7	3.5	3.8	3.7			3.9				4.5	
Stability, min	6.9	6.3	6.0	4.9			5.9				6.5	
Mixing tolerance index, BU	49	44	55	65			49				52	
<b>EXTENSOGRAM (45 min pull)</b>												
Area, cm2	69	96	76	67			79				80	
Maximum height, BU	260	335	325	310			315				310	
Extensibility, mm	185	190	166	148			172				179	
<b>ALVEOGRAM</b>												
Strength (S), cm2	41.7	37.5	32.0	28.1			35.8				38.4	
Stability (P), mm	83	81	68	67			78				80	
Distensibility (L), mm	117	106	117	109			112				120	
Configuration ratio (P/L)	0.71	0.77	0.58	0.62			0.70				0.67	
<b>MIXOGRAM</b>												
Peak time, min	2.3	2.3	2.6	2.4			2.3				2.3	
<b>100g BAKING TEST</b>												
Loaf volume, cm3	880	855	855	815			890				900	
Evaluation	1	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  
North-West Province**

PRODUCTION REGION	(12)					(14)						
	North-West Western Region					North-West Southern Region						
Intake silos	Bloubank Buhmannsdrif Kameel Kraaipan Madibogo Mafikeng Mareetsane Piet Plessis Springbokpan Vergeleë Vryburg Vryhof					Amalia Barberspan Delareyville Excelsior Geysdorp Hallat's Hope Migdol Nooitgedacht Schweizer-Reneke Taaibospan						
<b>WHEAT</b>	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>		<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>			
Protein (12% mb), %	11.8	11.4	12.4	0.6		12.1	11.1	12.5	0.5			
Falling number, sec	363	284	404	68.4		381	358	412	20.4			
1000 Kernel mass (13% mb), g	34.4	32.6	36.1	1.8		37.3	34.7	42.8	2.8			
Hectolitre mass (dirty), kg/hl	74.9	70.8	79.0	4.1		74.7	71.7	78.4	2.7			
Screenings (<1.8mm), %	5.4	4.6	7.0	1.3		1.1	0.8	1.5	0.2			
Total damaged kernels, %	0.5	0.2	0.7	0.2		0.4	0.2	0.7	0.2			
<b>Number of samples</b>	<b>3</b>					<b>6</b>						
<b>CULTIVARS</b>												
cultivars	CRN 826 52.3					SST 822 31.2						
with highest % occurrence	SST 806 30.7					CRN 826 28.8						
	SST 876 13.7					SST 806 12.7						
	SST 822 3.3					Duzi 8.8						
						Kariega 7.8						
<b>Number of samples</b>	<b>3</b>					<b>6</b>						
<b>MIXOGRAM (Quadromat)</b>	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>		<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>			
Peak time, min	2.8	2.8	2.9	0.1		3.0	2.7	3.2	0.2			
Tail height (6min), mm	49	47	50	1.5		51	47	54	2.5			
<b>Number of samples</b>	<b>3</b>					<b>6</b>						
<b>BÜHLER EXTRACTION, %</b>	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>UT</b>	<b>COW</b>	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>UT</b>	<b>COW</b>
					76.2		76.4	76.1	75.9			
<b>FLOUR</b>												
Protein (12% mb), %					11.7		11.6	11.3	12.2			
Colour, KJ					-0.7		-2.1	-1.3	-2.1			
<b>FARINOGRAM</b>												
Water absorption (14% mb), %					61.4		61.4	59.9	62.5			
Development time, min					2.7		3.2	4.4	5.0			
Stability, min					6.1		7.5	7.3	8.2			
Mixing tolerance index, BU					38		34	44	42			
<b>EXTENSOGRAM (45 min pull)</b>												
Area, cm2					90		80	82	92			
Maximum height, BU					325		310	300	330			
Extensibility, mm					194		177	195	196			
<b>ALVEOGRAM</b>												
Strength (S), cm2					39.1		39.4	35.3	47.9			
Stability (P), mm					70		76	66	83			
Distensibility (L), mm					139		130	135	137			
Configuration ratio (P/L)					0.50		0.59	0.49	0.60			
<b>MIXOGRAM</b>												
Peak time, min					2.5		2.6	2.7	2.8			
<b>100g BAKING TEST</b>												
Loaf volume, cm3					880		960	890	925			
Evaluation					1		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  
North-West Province**

PRODUCTION REGION	(15) North-West South-Eastern Region					(17) North-West Central Northern Region (Ottosdal)						
	Intake silos											
	Bloemhof Christiana Hertzogville Hoopstad Kingswood					Bospoort Hartbeesfontein Kleinharth Melliodora Ottosdal Rostrataville Vermaas Werda						
<b>WHEAT</b>												
	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>		<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>			
Protein (12% mb), %	11.8	10.6	13.5	1.0		11.8	11.6	12.1	0.3			
Falling number, sec	400	299	437	41.3		399	378	412	18.4			
1000 Kernel mass (13% mb), g	37.2	25.6	41.3	5.0		37.0	36.9	37.0	0.1			
Hectolitre mass (dirty), kg/hl	77.6	75.2	79.5	1.7		77.1	75.5	79.3	2.0			
Screenings (<1.8mm), %	1.1	0.2	5.1	1.5		1.6	1.0	2.2	0.6			
Total damaged kernels, %	0.6	0.1	1.1	0.4		0.4	0.1	0.6	0.2			
<b>Number of samples</b>	<b>10</b>					<b>3</b>						
<b>CULTIVARS</b>												
		CRN 826	43.9				CRN 826	45.3				
cultivars		SST 806	24.3				SST 822	34.7				
with highest %		PAN 3118	14.7				SST 876	12.7				
occurrence		SST 835	5.5				SST 806	5.7				
		SST 935	4.4				PAN 3434	1.7				
<b>Number of samples</b>	<b>10</b>					<b>3</b>						
<b>MIXOGRAM (Quadromat)</b>												
	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>		<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>			
Peak time, min	3.0	2.4	3.5	0.3		2.9	2.8	3.0	0.1			
Tail height (6min), mm	51	47	59	4.0		50	50	51	0.6			
<b>Number of samples</b>	<b>10</b>					<b>3</b>						
<b>BÜHLER EXTRACTION, %</b>	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>UT</b>	<b>COW</b>	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>UT</b>	<b>COW</b>
	75.1	77.3	77.5		74.2			76.8				
<b>FLOUR</b>												
Protein (12% mb), %	13.0	11.1	10.5		11.7			11.9				
Colour, KJ	-2.0	-2.0	-2.4		-1.1			-1.8				
<b>FARINOGRAM</b>												
Water absorption (14% mb), %	65.1	61.0	59.8		60.0			61.0				
Development time, min	6.8	4.8	4.2		4.8			4.7				
Stability, min	16.2	7.5	6.2		10.5			8.7				
Mixing tolerance index, BU	19	45	54		35			36				
<b>EXTENSOGRAM (45 min pull)</b>												
Area, cm2	125	96	100		128			125				
Maximum height, BU	425	365	315		485			410				
Extensibility, mm	206	184	222		181			212				
<b>ALVEOGRAM</b>												
Strength (S), cm2	66.7	43.7	34.4		55.7			50.2				
Stability (P), mm	121	86	68		97			79				
Distensibility (L), mm	105	116	123		124			156				
Configuration ratio (P/L)	1.14	0.75	0.55		0.79			0.51				
<b>MIXOGRAM</b>												
Peak time, min	2.9	2.7	2.8		3.0			2.5				
<b>100g BAKING TEST</b>												
Loaf volume, cm3	925	905	920		905			880				
Evaluation	2	0	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 MAINLY IRRIGATION North-West Province

PRODUCTION REGION	(18) North-West Central Region (Ventersdorp)					(19) North-West Central Region (Lichtenburg)						
	Intake silos											
	Bodenstein Buckingham Coligny Enselspruit Makokskraal Potchefstroom Ventersdorp					Grootpan Halfpad Hibernia Lichtenburg Lottiehalte Lusthof						
<b>WHEAT</b>												
	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>		<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>			
Protein (12% mb), %	11.1	10.4	11.9	0.7		11.4	10.5	12.1	0.7			
Falling number, sec	365	349	411	23.2		385	348	413	23.5			
1000 Kernel mass (13% mb), g	38.4	37.5	39.1	0.5		40.1	32.1	44.2	3.4			
Hectolitre mass (dirty), kg/hl	77.3	76.7	78.3	0.6		77.6	74.2	79.3	1.7			
Screenings (<1.8mm), %	0.6	0.5	0.7	0.1		1.3	0.3	3.1	0.8			
Total damaged kernels, %	0.7	0.5	1.1	0.2		0.5	0.3	1.1	0.2			
<b>Number of samples</b>	<b>6</b>					<b>10</b>						
<b>CULTIVARS</b>												
	SST 806					SST 806						
	53.7					35.0						
cultivars	CRN 826					CRN 826						
	40.8					33.9						
with highest %	Olifants					SST 876						
occurrence	3.7					17.2						
	SST 876					SST 822						
	1.8					6.4						
						SST 835						
						5.5						
<b>Number of samples</b>	<b>6</b>					<b>10</b>						
<b>MIXOGRAM (Quadromat)</b>												
	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>		<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>			
Peak time, min	2.8	2.7	3.0	0.1		2.7	2.3	3.0	0.2			
Tail height (6min), mm	50	47	52	1.7		49	46	51	1.6			
<b>Number of samples</b>	<b>6</b>					<b>10</b>						
<b>BÜHLER EXTRACTION, %</b>												
	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>UT</b>	<b>COW</b>	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>UT</b>	<b>COW</b>
		78.0	77.8				77.3	78.3				76.8
<b>FLOUR</b>												
Protein (12% mb), %		11.4	9.8				11.9	10.8				10.7
Colour, KJ		-1.4	-1.8				-1.8	-1.9				-1.5
<b>FARINOGRAM</b>												
Water absorption (14% mb), %		62.8	60.0				62.9	61.0				60.5
Development time, min		5.0	3.5				4.9	5.0				4.3
Stability, min		6.5	6.5				5.7	6.4				7.0
Mixing tolerance index, BU		59	46				61	62				48
<b>EXTENSOGRAM (45 min pull)</b>												
Area, cm2		99	88				103	100				88
Maximum height, BU		335	350				330	345				335
Extensibility, mm		204	175				218	202				185
<b>ALVEOGRAM</b>												
Strength (S), cm2		45.6	34.6				44.6	39.1				38.2
Stability (P), mm		85	76				81	77				75
Distensibility (L), mm		129	109				134	124				125
Configuration ratio (P/L)		0.65	0.69				0.61	0.62				0.60
<b>MIXOGRAM</b>												
Peak time, min		2.5	2.7				2.3	2.3				2.8
<b>100g BAKING TEST</b>												
Loaf volume, cm3		940	855				950	850				850
Evaluation		0	0				0	0				0

# RHEOLOGICAL GRAPHS PER PRODUCTION REGION



**SOUTH AFRICAN  
MAINLY IRRIGATION  
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							
<b>WHEAT</b>	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>				
Protein (12% mb), %	11.2	9.8	12.6	0.7	12.0	11.2	13.0	0.7				
Falling number, sec	360	310	400	27.2	354	278	462	67.4				
1000 Kernel mass (13% mb), g	41.4	37.6	45.1	1.9	36.9	33.0	38.3	1.8				
Hectolitre mass (dirty), kg/hl	77.4	69.9	79.1	2.5	78.4	74.8	80.0	1.9				
Screenings (<1.8mm), %	1.3	0.1	2.6	0.6	2.3	1.3	4.6	1.1				
Total damaged kernels, %	1.8	0.5	5.2	1.4	1.0	0.5	1.2	0.2				
<b>Number of samples</b>	<b>13</b>				<b>8</b>							
<b>CULTIVARS</b>												
cultivars	CRN 826 25.4				Elands 35.6							
with highest % occurrence	SST 806 21.4				CRN 826 19.9							
	Kariega 13.2				SST 806 17.9							
	SST 876 11.2				PAN 3118 14.6							
	SST 835 9.9				Betta-DN 5.4							
<b>Number of samples</b>	<b>13</b>				<b>8</b>							
<b>MIXOGRAM (Quadromat)</b>	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>				
Peak time, min	2.7	2.3	3.3	0.3	3.6	3.2	4.4	0.5				
Tail height (6min), mm	49	45	55	3.3	55	51	60	2.8				
<b>Number of samples</b>	<b>13</b>				<b>8</b>							
<b>BÜHLER EXTRACTION, %</b>	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>UT</b>	<b>COW</b>	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>UT</b>	<b>COW</b>
	76.7	77.8	76.9			77.7	75.4	76.1				
<b>FLOUR</b>												
Protein (12% mb), %	12.2	11.1	10.5			10.3	12.6	11.1				
Colour, KJ	-1.2	-1.4	-1.3			-1.7	-1.0	-1.6				
<b>FARINOGRAM</b>												
Water absorption (14% mb), %	65.0	62.0	59.8			58.9	60.8	58.8				
Development time, min	5.2	2.5	3.2			3.8	5.9	2.0				
Stability, min	9.4	6.2	7.7			6.1	12.7	10.8				
Mixing tolerance index, BU	33	41	36			55	25	10				
<b>EXTENSOGRAM (45 min pull)</b>												
Area, cm2	127	90	108			95	138	139				
Maximum height, BU	405	300	375			335	485	535				
Extensibility, mm	217	210	199			197	194	186				
<b>ALVEOGRAM</b>												
Strength (S), cm2	54.9	39.1	41.9			32.7	56.3	49.5				
Stability (P), mm	109	78	79			59	99	91				
Distensibility (L), mm	106	121	122			140	110	112				
Configuration ratio (P/L)	1.03	0.64	0.65			0.42	0.90	0.81				
<b>MIXOGRAM</b>												
Peak time, min	2.5	2.6	2.9			2.5	3.7	3.7				
<b>100g BAKING TEST</b>												
Loaf volume, cm3	830	900	870			830	900	865				
Evaluation	3	0	0			0	2	0				

# RHEOLOGICAL GRAPHS PER PRODUCTION REGION



# 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						
<b>WHEAT</b>	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>		<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>			
Protein (12% mb), %	11.1	9.4	13.1	1.0		11.1	9.2	13.7	1.2			
Falling number, sec	312	227	392	34.2		298	209	378	59.8			
1000 Kernel mass (13% mb), g	38.4	34.2	42.1	2.4		39.8	36.6	42.1	1.6			
Hectolitre mass (dirty), kg/hl	79.2	75.9	81.3	1.4		80.2	78.0	82.2	1.4			
Screenings (<1.8mm), %	1.5	0.6	3.2	0.7		0.7	0.2	1.1	0.3			
Total damaged kernels, %	0.4	0.0	1.0	0.3		0.7	0.1	3.0	0.8			
<b>Number of samples</b>	<b>26</b>					<b>10</b>						
<b>CULTIVARS</b>												
	Elands 32.1					Elands 47.8						
cultivars	Gariiep 31.0					PAN 3377 12.0						
with highest %	PAN 3377 10.8					CRN 826 10.2						
occurrence	PAN 3118 5.3					SST 806 6.7						
	Betta-DN 5.0					SST 356 5.4						
<b>Number of samples</b>	<b>26</b>					<b>10</b>						
<b>MIXOGRAM (Quadromat)</b>	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>		<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>			
Peak time, min	3.6	2.8	5.0	0.5		3.2	2.4	3.8	0.5			
Tail height (6min), mm	54	46	62	4.2		53	47	65	5.0			
<b>Number of samples</b>	<b>26</b>					<b>10</b>						
<b>BÜHLER EXTRACTION, %</b>	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>UT</b>	<b>COW</b>	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>UT</b>	<b>COW</b>
	75.0	75.0	75.4	75.0	74.7			74.9	74.5	74.1		
<b>FLOUR</b>												
Protein (12% mb), %	12.8	11.5	10.1	9.1	9.1			10.8	9.9	8.9		
Colour, KJ	-1.6	1.8	-0.3	-1.9	-1.0			-0.7	-1.8	-2.0		
<b>FARINOGRAM</b>												
Water absorption (14% mb), %	62.4	61.5	61.1	62.1	58.9			62.9	62.9	62.2		
Development time, min	3.8	3.5	2.2	1.8	1.4			4.5	2.3	1.9		
Stability, min	13.1	8.9	6.1	3.4	3.0			7.5	6.2	3.7		
Mixing tolerance index, BU	18	26	46	71	66			44	43	66		
<b>EXTENSOGRAM (45 min pull)</b>												
Area, cm2	142	124	95	85	96			94	82	85		
Maximum height, BU	520	475	455	405	395			390	365	405		
Extensibility, mm	191	187	150	146	151			166	156	145		
<b>ALVEOGRAM</b>												
Strength (S), cm2	57.3	52.1	43.6	36.5	34.6			48.2	43.0	37.6		
Stability (P), mm	114	108	118	129	97			109	113	119		
Distensibility (L), mm	92	94	65	46	66			93	73	56		
Configuration ratio (P/L)	1.23	1.15	1.82	2.78	1.46			1.17	1.53	2.13		
<b>MIXOGRAM</b>												
Peak time, min	3.5	2.8	3.3	2.9	2.7			2.5	3.2	2.3		
<b>100g BAKING TEST</b>												
Loaf volume, cm3	885	825	785	550	725			800	715	645		
Evaluation	3	2	1	6	1			2	3	4		

# 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 (North-Western)

PRODUCTION REGION	(22) Free-State North-Western Region (Bothaville)				(23) Free-State North-Western Region (Bultfontein)							
	Intake silos				Intake silos							
	Allanridge Bothaville Mirage Odendaalsrus Schoonspruit Schuttesdraai				Bultfontein Losdoorns Protespan Tierfontein Wesselsbron Willemsrust							
<b>WHEAT</b>	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>				
Protein (12% mb), %	12.1	11.0	12.6	0.7	11.5	9.0	13.9	1.1				
Falling number, sec	383	294	431	64.2	367	151	445	65.3				
1000 Kernel mass (13% mb), g	36.6	33.3	38.8	1.8	35.7	22.0	39.4	3.6				
Hectolitre mass (dirty), kg/hl	77.8	76.0	79.6	1.3	77.7	66.9	81.6	3.0				
Screenings (<1.8mm), %	1.6	0.6	2.3	0.6	2.1	0.9	8.3	1.4				
Total damaged kernels, %	1.7	0.5	4.3	1.4	0.5	0.1	2.4	0.5				
<b>Number of samples</b>	<b>6</b>				<b>25</b>							
<b>CULTIVARS</b>												
cultivars	CRN 826		33.0		CRN 826		40.3					
with highest % occurrence	PAN 3377		14.8		PAN 3118		26.9					
	SST 806		12.3		PAN 3120		7.4					
	PAN 3118		9.8		SST 334		3.7					
	SST 835		7.5		SST 806		3.5					
<b>Number of samples</b>	<b>6</b>				<b>25</b>							
<b>MIXOGRAM (Quadromat)</b>	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>				
Peak time, min	2.7	2.2	3.5	0.6	3.0	2.3	3.8	0.5				
Tail height (6min), mm	54	48	59	4.6	53	46	68	5.2				
<b>Number of samples</b>	<b>6</b>				<b>25</b>							
<b>BÜHLER EXTRACTION, %</b>	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>UT</b>	<b>COW</b>	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>UT</b>	<b>COW</b>
		75.9	75.5				75.3	75.6	76.3	73.0	74.7	71.5
<b>FLOUR</b>												
Protein (12% mb), %		12.2	11.2				11.9	11.2	10.6	8.8	10.9	12.6
Colour, KJ		-1.7	-1.7				-1.9	-1.9	-2.3	-2.4	-2.2	0.0
<b>FARINOGRAM</b>												
Water absorption (14% mb), %		61.6	60.9				63.0	61.1	59.1	62.4	60.7	62.0
Development time, min		5.5	4.7				6.0	4.8	4.0	1.7	3.0	5.2
Stability, min		9.0	7.2				9.4	8.7	6.9	3.5	7.8	9.2
Mixing tolerance index, BU		40	43				37	37	42	62	33	42
<b>EXTENSOGRAM (45 min pull)</b>												
Area, cm2		119	110				95	98	93	69	92	132
Maximum height, BU		400	375				365	410	355	355	390	445
Extensibility, mm		204	200				187	167	179	132	165	204
<b>ALVEOGRAM</b>												
Strength (S), cm2		54.1	44.6				56.6	48.6	39.1	34.6	45.1	58.7
Stability (P), mm		90	87				104	91	73	135	96	100
Distensibility (L), mm		134	117				114	115	134	41	99	118
Configuration ratio (P/L)		0.67	0.74				0.91	0.79	0.54	3.26	0.98	0.85
<b>MIXOGRAM</b>												
Peak time, min		2.8	2.5				2.8	2.5	2.5	4.0	2.8	3.3
<b>100g BAKING TEST</b>												
Loaf volume, cm3		950	880				950	910	850	660	765	835
Evaluation		0	0				0	0	0	3	3	4

# 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 (Eastern)**

PRODUCTION REGION	(25) Free State South-Eastern Region (Bethlehem)					(28) Free State Eastern Region						
	Intake silos											
	Bethlehem					Afrikaskop						
	Clocolan					Ascent						
	De Wetsdorp					Cornelia						
	Ficksburg					Daniëlsrus						
	Fouriesburg					Eeram						
	Marseilles					Frankfort						
	Modderpoort					Harrismith						
	Slabberts					Jim Fouché						
	Tweespruit					Kransfontein						
	Westminster					Memel						
	Zastron					Reitz						
						Tweeling						
						Villiers						
						Vrede						
						Warden						
						Windfield						
<b>WHEAT</b>												
	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>		<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>			
Protein (12% mb), %	10.6	8.8	13.3	1.0		10.8	9.2	12.4	0.8			
Falling number, sec	325	228	444	38.9		337	278	446	40.7			
1000 Kernel mass (13% mb), g	39.8	34.7	45.3	2.7		40.9	36.5	44.8	2.0			
Hectolitre mass (dirty), kg/hl	78.1	64.4	81.3	3.5		80.5	76.7	82.7	1.3			
Screenings (<1.8mm), %	1.8	0.5	4.2	1.1		0.8	0.1	4.8	0.9			
Total damaged kernels, %	0.4	0.1	1.3	0.2		0.4	0.0	1.1	0.3			
<b>Number of samples</b>	<b>32</b>					<b>32</b>						
<b>CULTIVARS</b>												
			Elands	40.9				Elands	51.5			
cultivars			Gariep	10.6				SST 835	7.4			
with highest %			Matlabas	7.7				Betta-DN	6.6			
occurrence			Betta-DN	7.0				PAN 3377	6.4			
			SST 399	6.3				CRN 826	4.9			
<b>Number of samples</b>	<b>32</b>					<b>32</b>						
<b>MIXOGRAM (Quadromat)</b>												
	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>		<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>			
Peak time, min	3.5	1.7	4.8	0.6		3.3	2.3	5.0	0.5			
Tail height (6min), mm	52	45	60	3.7		54	46	63	3.9			
<b>Number of samples</b>	<b>32</b>					<b>32</b>						
	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>UT</b>	<b>COW</b>	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>UT</b>	<b>COW</b>
<b>BÜHLER EXTRACTION, %</b>	75.6	75.0	75.0	74.7	75.0	75.2	75.5	76.0	75.0	74.5		
<b>FLOUR</b>												
Protein (12% mb), %	12.6	11.3	10.4	9.2	9.7	12.1	12.1	11.1	10.1	9.0		
Colour, KJ	-2.1	-1.7	-1.8	-2.1	-0.7	-0.3	-1.4	-1.5	-1.6	-2.0		
<b>FARINOGRAM</b>												
Water absorption (14% mb), %	65.7	63.2	62.7	62.6	62.2	61.6	66.2	63.4	61.7	61.4		
Development time, min	4.5	2.7	2.2	2.0	2.3	4.7	4.7	2.0	1.4	1.8		
Stability, min	7.1	8.8	7.7	4.2	6.2	9.3	9.3	9.9	6.1	3.0		
Mixing tolerance index, BU	41	38	35	59	42	35	30	13	44	70		
<b>EXTENSOGRAM (45 min pull)</b>												
Area, cm2	74	114	116	100	88	113	109	100	90	81		
Maximum height, BU	300	465	470	450	385	430	390	415	410	405		
Extensibility, mm	175	173	173	154	157	183	195	169	152	137		
<b>ALVEOGRAM</b>												
Strength (S), cm2	44.5	53.7	51.7	41.7	40.7	53.2	64.2	57.2	42.8	36.5		
Stability (P), mm	106	120	133	140	114	101	132	120	117	125		
Distensibility (L), mm	85	87	70	50	70	106	98	94	66	48		
Configuration ratio (P/L)	1.25	1.37	1.91	2.80	1.64	0.96	1.34	1.27	1.78	2.59		
<b>MIXOGRAM</b>												
Peak time, min	2.2	2.7	3.3	3.7	3.0	2.9	2.7	3.3	3.7	3.7		
<b>100g BAKING TEST</b>												
Loaf volume, cm3	750	850	780	700	790	875	850	840	685	625		
Evaluation	6	1	2	2	0	2	2	1	4	5		

# RHEOLOGICAL GRAPHS PER PRODUCTION REGION



# SOUTH AFRICAN

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

## OTHER SUMMER RAINFALL WHEAT AND IRRIGATION

### Mpumalanga

PRODUCTION REGION	(24) Free State Central Region					(29) Mpumalanga Southern Region						
	Intake silos					Balfour Greylingstad Grootvlei Harvard Holmdene Leeuspruit Platrand Standerton Val						
<b>WHEAT</b>												
	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>		<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>			
Protein (12% mb), %	11.6	9.4	12.6	0.6		12.6	12.5	12.8	0.2			
Falling number, sec	344	247	459	54.8		388	349	412	34.1			
1000 Kernel mass (13% mb), g	36.3	33.1	39.5	1.8		38.0	37.1	38.6	0.8			
Hectolitre mass (dirty), kg/hl	77.7	74.0	81.4	2.0		78.1	77.8	78.7	0.5			
Screenings (<1.8mm), %	2.2	0.8	5.7	1.3		0.7	0.6	0.8	0.1			
Total damaged kernels, %	2.6	0.2	8.8	3.0		0.6	0.5	0.7	0.1			
<b>Number of samples</b>	<b>26</b>					<b>3</b>						
<b>CULTIVARS</b>												
		CRN 826	25.2			SST 806	47.7					
cultivars		PAN 3118	18.0			CRN 826	40.7					
with highest %		Gariep	14.6			SST 876	9.7					
occurrence		PAN 3377	9.4			Olifants	2.0					
		Elands	7.5									
<b>Number of samples</b>	<b>26</b>					<b>3</b>						
<b>MIXOGRAM (Quadromat)</b>												
	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>		<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>			
Peak time, min	2.9	2.3	3.7	0.4		2.3	2.2	2.5	0.2			
Tail height (6min), mm	53	41	63	4.8		50	48	51	1.5			
<b>Number of samples</b>	<b>26</b>					<b>3</b>						
<b>BÜHLER EXTRACTION, %</b>												
	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>UT</b>	<b>COW</b>	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>UT</b>	<b>COW</b>
	74.9	75.7	74.2		75.3	75.4	76.6					
<b>FLOUR</b>												
Protein (12% mb), %	11.9	11.3	10.4		11.5	11.7	12.6					
Colour, KJ	-1.6	-1.9	-1.9		-1.8	-1.5	-2.0					
<b>FARINOGRAM</b>												
Water absorption (14% mb), %	61.6	61.7	60.4		61.3	60.9	61.7					
Development time, min	5.5	4.2	2.2		5.0	4.7	5.2					
Stability, min	11.2	7.9	6.0		9.7	7.7	6.1					
Mixing tolerance index, BU	28	45	47		33	41	56					
<b>EXTENSOGRAM (45 min pull)</b>												
Area, cm <sup>2</sup>	134	106	97		113	103	90					
Maximum height, BU	480	390	440		430	370	305					
Extensibility, mm	194	191	159		179	194	202					
<b>ALVEOGRAM</b>												
Strength (S), cm <sup>2</sup>	56.4	47.2	45.9		52.8	45.4	38.2					
Stability (P), mm	97	94	103		98	81	69					
Distensibility (L), mm	119	107	83		113	127	149					
Configuration ratio (P/L)	0.82	0.88	1.25		0.87	0.64	0.47					
<b>MIXOGRAM</b>												
Peak time, min	2.8	2.8	3.3		2.8	2.3	2.3					
<b>100g BAKING TEST</b>												
Loaf volume, cm <sup>3</sup>	855	850	740		825	900	965					
Evaluation	2	1	3		2	0	0					

# RHEOLOGICAL GRAPHS PER PRODUCTION REGION



# SOUTH AFRICAN OTHER SUMMER RAINFALL WHEAT AND IRRIGATION Mpumalanga

PRODUCTION REGION	(30) Mpumalanga Eastern Region					(32) Mpumalanga Western Region						
	Intake silos					Argent Dryden Endicott Elof Hawerklip Kendal Ogies						
<b>WHEAT</b>												
	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>		<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>			
Protein (12% mb), %	11.3	11.1	11.4	0.1		12.3	11.7	12.6	0.5			
Falling number, sec	428	372	473	37.1		344	333	352	9.7			
1000 Kernel mass (13% mb), g	41.9	41.2	43.0	0.8		38.1	35.2	39.9	2.5			
Hectolitre mass (dirty), kg/hl	78.2	77.4	79.0	0.8		77.8	75.6	79.1	1.9			
Screenings (<1.8mm), %	2.7	1.5	5.5	1.6		1.2	0.7	2.1	0.8			
Total damaged kernels, %	0.4	0.1	1.0	0.4		0.4	0.2	0.7	0.2			
<b>Number of samples</b>	<b>5</b>					<b>3</b>						
<b>CULTIVARS</b>												
			Kariega	22.8			SST 806	46.0				
cultivars			CRN 826	21.2			CRN 826	36.0				
with highest %			SST 806	20.6			SST 876	14.3				
occurrence			SST 876	16.6			SST 835	3.7				
			Duzi	11.4								
<b>Number of samples</b>	<b>5</b>					<b>3</b>						
<b>MIXOGRAM (Quadromat)</b>												
	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>		<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>			
Peak time, min	2.3	2.3	2.4	0.0		2.8	2.7	3.0	0.2			
Tail height (6min), mm	48	47	50	1.3		51	50	53	1.5			
<b>Number of samples</b>	<b>5</b>					<b>3</b>						
<b>BÜHLER EXTRACTION, %</b>												
	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>UT</b>	<b>COW</b>	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>UT</b>	<b>COW</b>
		78.0					77.8		76.4			
<b>FLOUR</b>												
Protein (12% mb), %		11.0					12.9		11.1			
Colour, KJ		-2.3					-0.8		-2.1			
<b>FARINOGRAM</b>												
Water absorption (14% mb), %		61.9					63.3		60.8			
Development time, min		3.4					5.9		4.0			
Stability, min		5.8					8.2		8.2			
Mixing tolerance index, BU		51					43		38			
<b>EXTENSOGRAM (45 min pull)</b>												
Area, cm2		75					122		117			
Maximum height, BU		285					355		390			
Extensibility, mm		184					240		210			
<b>ALVEOGRAM</b>												
Strength (S), cm2		37.5					48.6		43.4			
Stability (P), mm		76					80		82			
Distensibility (L), mm		123					148		126			
Configuration ratio (P/L)		0.62					0.54		0.65			
<b>MIXOGRAM</b>												
Peak time, min		2.3					2.5		2.6			
<b>100g BAKING TEST</b>												
Loaf volume, cm3		890					1000		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  
OTHER SUMMER RAINFALL WHEAT AND IRRIGATION  
Gauteng and Limpopo Provinces**

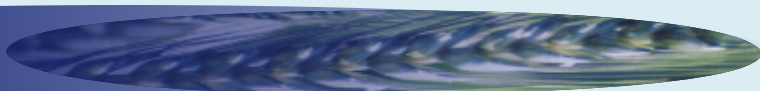
PRODUCTION REGION	(34) Gauteng					(35) Limpopo						
	Intake silos					Alma Crecy Immerpan Lehau Naboomspruit Northam Nutfield Nylstroom Pienaarsrivier Pietersburg Potgietersrus Roedtan Settlers Tzaneen Vaalwater Warmbad						
<b>WHEAT</b>												
	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>		<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>			
Protein (12% mb), %	11.5	9.8	13.4	1.1		11.4	9.3	13.0	1.2			
Falling number, sec	378	323	411	28.4		402	339	479	40.3			
1000 Kernel mass (13% mb), g	39.3	34.4	49.4	4.2		37.6	32.1	43.5	3.5			
Hectolitre mass (dirty), kg/hl	78.0	76.7	79.1	0.8		77.4	73.4	79.4	2.0			
Screenings (<1.8mm), %	1.6	0.5	3.0	0.8		1.9	0.5	4.5	1.2			
Total damaged kernels, %	0.6	0.1	1.4	0.4		0.6	0.0	2.2	0.8			
<b>Number of samples</b>	<b>11</b>					<b>10</b>						
<b>CULTIVARS</b>												
		CRN 826	36.4				CRN 826	32.3				
cultivars		SST 806	25.3				Duzi	21.0				
with highest %		Kariega	11.2				SST 806	18.6				
occurrence		Duzi	10.5				SST 835	7.4				
		SST 876	8.0				SST 876	4.9				
<b>Number of samples</b>	<b>11</b>					<b>10</b>						
<b>MIXOGRAM (Quadromat)</b>												
	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>		<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>			
Peak time, min	2.6	2.3	3.3	0.3		2.7	1.8	3.5	0.5			
Tail height (6min), mm	47	43	59	4.6		47	43	51	2.6			
<b>Number of samples</b>	<b>11</b>					<b>10</b>						
<b>BÜHLER EXTRACTION, %</b>	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>UT</b>	<b>COW</b>	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>UT</b>	<b>COW</b>
	76.0	76.7	77.3	76.2			76.4	76.6		77.7	76.4	
<b>FLOUR</b>												
Protein (12% mb), %	12.4	11.0	9.8	8.6			12.3	11.1		9.1	11.1	
Colour, KJ	-1.2	-2.0	-1.7	-1.7			-0.1	-1.5		-2.1	-1.6	
<b>FARINOGRAM</b>												
Water absorption (14% mb), %	61.6	60.4	60.2	57.0			61.9	61.7		56.6	60.6	
Development time, min	4.5	4.0	2.3	2.2			4.7	4.3		1.9	3.4	
Stability, min	6.7	5.8	6.0	4.6			6.7	6.7		6.4	6.7	
Mixing tolerance index, BU	52	56	46	57			46	48		41	41	
<b>EXTENSOGRAM (45 min pull)</b>												
Area, cm2	96	87	79	68			85	84		79	104	
Maximum height, BU	345	295	330	310			315	330		355	345	
Extensibility, mm	195	192	170	146			191	180		153	213	
<b>ALVEOGRAM</b>												
Strength (S), cm2	41.4	34.1	39.9	24.0			42.2	37.0		34.1	35.8	
Stability (P), mm	74	72	86	64			80	78		64	74	
Distensibility (L), mm	142	120	103	87			127	113		130	117	
Configuration ratio (P/L)	0.52	0.60	0.84	0.74			0.63	0.70		0.49	0.63	
<b>MIXOGRAM</b>												
Peak time, min	2.4	2.3	2.8	2.5			2.3	2.5		3.0	2.5	
<b>100g BAKING TEST</b>												
Loaf volume, cm3	920	865	820	805			950	860		800	850	
Evaluation	1	0	0	0			0	0		0	1	

# RHEOLOGICAL GRAPHS PER PRODUCTION REGION

**MIXOGRAM**

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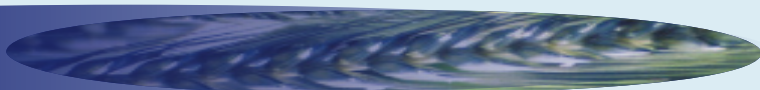
35



**FARINOGRAM**

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**EXTENSOGRAM**

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**ALVEOGRAM**

34

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**SOUTH AFRICAN  
OTHER SUMMER RAINFALL WHEAT AND IRRIGATION  
KwaZulu-Natal Province**

<b>(36)</b>	
<b>PRODUCTION REGION</b>	<b>KwaZulu-Natal</b>
Intake silos	Bergville Bloedrivier Dannhauser Dundee Mizpah New Amalfi Paulpietersburg Vryheid Winterton
<b>WHEAT</b>	
	<b>ave min max stdev</b>
Protein (12% mb), %	12.8 11.8 13.5 0.6
Falling number, sec	292 101 390 96.6
1000 Kernel mass (13% mb), g	38.9 36.1 41.9 1.5
Hectolitre mass (dirty), kg/hl	78.6 75.7 81.4 1.6
Screenings (<1.8mm), %	1.6 0.9 2.6 0.6
Total damaged kernels, %	2.4 0.4 11.1 2.7
<b>Number of samples</b>	<b>15</b>
<b>CULTIVARS</b>	
	SST 806 42.9
cultivars	CRN 826 28.1
with highest %	SST 835 16.7
occurrence	SST 825 3.5
	Kariega 3.3
<b>Number of samples</b>	<b>15</b>
<b>MIXOGRAM (Quadromat)</b>	
	<b>ave min max stdev</b>
Peak time, min	2.9 2.5 3.8 0.5
Tail height (6min), mm	51 48 55 2.5
<b>Number of samples</b>	<b>15</b>
	<b>B1 B2 B3 B4 UT COW</b>
<b>BÜHLER EXTRACTION, %</b>	77.5 76.9 76.2 75.5
<b>FLOUR</b>	
Protein (12% mb), %	12.2 11.4 12.3 12.8
Colour, KJ	-1.1 -1.7 -0.4 0.3
<b>FARINOGRAM</b>	
Water absorption (14% mb), %	62.6 61.7 61.1 62.0
Development time, min	5.3 5.2 4.8 3.4
Stability, min	8.2 8.3 8.2 7.8
Mixing tolerance index, BU	46 45 42 39
<b>EXTENSOGRAM (45 min pull)</b>	
Area, cm2	121 110 137 152
Maximum height, BU	415 390 415 435
Extensibility, mm	202 200 219 237
<b>ALVEOGRAM</b>	
Strength (S), cm2	45.9 38.1 48.5 53.2
Stability (P), mm	90 79 77 79
Distensibility (L), mm	115 114 141 145
Configuration ratio (P/L)	0.78 0.69 0.55 0.55
<b>MIXOGRAM</b>	
Peak time, min	2.7 2.6 3.0 3.2
<b>100g BAKING TEST</b>	
Loaf volume, cm3	935 875 945 945
Evaluation	0 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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