

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

PRODUCTION REGION	(1) Namaqualand					(2) Swartland Western Region						
	Intake silos					Bergrivier Darling Koperfontein Vredenburg						
WHEAT	ave	min	max	stdev		ave	min	max	stdev			
Protein (12% mb), %	12.2	11.3	13.3	1.01		12.3	11.6	13.0	0.44			
Falling number, sec	393	377	407	15.10		422	395	458	19.96			
1000 Kernel mass (13% mb), g	43.2	40.2	48.9	4.91		37.9	34.4	38.9	1.25			
Hectolitre mass (dirty), kg/hl	79.7	79.4	80.0	0.31		77.7	74.5	81.2	1.95			
Screenings (<1.8mm), %	2.40	2.20	2.54	0.18		2.67	1.78	4.72	0.81			
Total damaged kernels, %	1.15	1.08	1.28	0.12		0.63	0.18	0.84	0.21			
Number of samples	3					12						
CULTIVARS												
	SST 88 36.0					SST 027 36.9						
cultivars	SST 015 31.7					SST 015 28.8						
with highest %	SST 027 26.7					SST 88 24.7						
occurrence	SST 047 3.0					SST 047 3.5						
	PAN 3492 2.7					SST 056 2.3						
Number of samples	3					12						
MIXOGRAM (Quadromat)	ave	min	max	stdev		ave	min	max	stdev			
Peak time, min	2.9	2.6	3.3	0.38		2.7	2.5	2.8	0.11			
Tail height (6min), mm	50	49	51	1.00		48	45	50	1.73			
Number of samples	3					12						
BÜHLER EXTRACTION, %	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	74.4	74.0	-	-	-	-	74.5	-	-	-	73.7	-
FLOUR												
Protein (12% mb), %	11.4	9.7	-	-	-	-	11.7	-	-	-	11.2	-
Colour, KJ	-2.3	-2.2	-	-	-	-	-2.4	-	-	-	-2.0	-
GLUTEN												
Wet gluten (14% mb), %	31.5	24.5	-	-	-	-	31.8	-	-	-	30.5	-
Dry gluten (14% mb), %	11.5	8.3	-	-	-	-	11.9	-	-	-	11.2	-
FARINOGRAM												
Water absorption (14% mb), %	63.6	63.0	-	-	-	-	62.6	-	-	-	61.1	-
Development time, min	6.2	2.7	-	-	-	-	5.7	-	-	-	5.3	-
Stability, min	7.3	9.2	-	-	-	-	7.7	-	-	-	6.8	-
Mixing tolerance index, BU	45	13	-	-	-	-	34	-	-	-	38	-
EXTENSOGRAM (45 min pull)												
Area, cm2	97	88	-	-	-	-	87	-	-	-	86	-
Maximum height, BU	335	400	-	-	-	-	330	-	-	-	325	-
Extensibility, mm	202	156	-	-	-	-	186	-	-	-	184	-
ALVEOGRAM												
Strength (S), cm2	37.0	34.1	-	-	-	-	32.3	-	-	-	29.4	-
Stability (P), mm	91	107	-	-	-	-	82	-	-	-	81	-
Distensibility (L), mm	93	63	-	-	-	-	92	-	-	-	84	-
Configuration ratio (P/L)	0.98	1.70	-	-	-	-	0.89	-	-	-	0.96	-
MIXOGRAM												
Peak time, min	2.7	2.7	-	-	-	-	2.5	-	-	-	2.8	-
100g BAKING TEST												
Loaf volume, cm3	870	775	-	-	-	-	880	-	-	-	890	-
Evaluation	1	0	-	-	-	-	1	-	-	-	0	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION



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SOUTH AFRICAN WINTER RAINFALL WHEAT Western Cape Province

PRODUCTION REGION	(3) Swartland Central Region				(4) Swartland Eastern Region							
	Intake silos				Ceres Gouda Halfmanshof Leliedam Porterville Riebeeck-Wes							
WHEAT												
	ave	min	max	stdev	ave	min	max	stdev				
Protein (12% mb), %	11.7	9.7	13.5	1.00	11.2	9.3	13.2	0.93				
Falling number, sec	410	350	475	28.72	387	331	451	30.13				
1000 Kernel mass (13% mb), g	40.6	34.0	45.6	2.41	39.9	35.8	44.0	2.10				
Hectolitre mass (dirty), kg/hl	79.7	76.2	83.6	1.47	81.2	77.5	84.1	1.31				
Screenings (<1.8mm), %	2.02	0.30	6.64	0.99	1.09	0.04	5.45	1.37				
Total damaged kernels, %	0.32	0.00	0.72	0.17	0.43	0.08	1.36	0.32				
Number of samples	44				25							
CULTIVARS												
	SST 015		34.3		SST 88		29.3					
cultivars	SST 027		27.3		SST 027		26.2					
with highest %	SST 88		24.0		SST 015		22.9					
occurrence	SST 835		4.7		SST 57		11.8					
	SST 047		4.1		SST 047		7.5					
Number of samples	44				25							
MIXOGRAM (Quadromat)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	2.7	2.2	3.8	0.27	2.7	2.1	3.3	0.25				
Tail height (6min), mm	48	42	55	3.06	47	42	51	2.78				
Number of samples	44				25							
BÜHLER EXTRACTION, %												
	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	74.5	74.7	75.1	75.7	74.9	-	74.3	74.4	74.6	73.9	76.1	-
FLOUR												
Protein (12% mb), %	12.0	10.5	9.3	9.5	11.5	-	11.8	10.7	9.3	9.3	9.0	-
Colour, KJ	-2.4	-2.5	-2.6	-2.4	-2.3	-	-2.6	-2.7	-2.6	-2.6	-2.1	-
GLUTEN												
Wet gluten (14% mb), %	33.0	28.4	24.4	25.4	31.5	-	33.6	29.2	24.2	26.3	23.3	-
Dry gluten (14% mb), %	12.1	10.6	8.9	9.0	11.5	-	12.2	10.3	8.5	9.3	7.8	-
FARINOGRAM												
Water absorption (14% mb), %	63.8	62.1	60.8	61.7	62.7	-	62.8	61.6	60.4	60.7	61.9	-
Development time, min	6.2	5.4	4.8	3.3	5.7	-	5.9	6.0	4.8	3.9	4.5	-
Stability, min	7.4	7.0	6.1	6.2	6.8	-	7.4	7.4	6.1	5.4	5.5	-
Mixing tolerance index, BU	35	43	50	35	39	-	35	38	43	45	47	-
EXTENSOGRAM (45 min pull)												
Area, cm2	96	94	79	62	92	-	95	85	73	73	-	-
Maximum height, BU	315	350	310	290	330	-	320	325	320	310	-	-
Extensibility, mm	210	189	175	147	191	-	209	183	161	157	-	-
ALVEOGRAM												
Strength (S), cm2	37.3	32.3	27.7	26.3	32.6	-	32.3	29.4	26.8	25.7	26.6	-
Stability (P), mm	85	86	83	87	84	-	77	79	77	80	94	-
Distensibility (L), mm	107	86	76	66	90	-	100	82	80	73	59	-
Configuration ratio (P/L)	0.79	1.00	1.09	1.32	0.93	-	0.77	0.96	0.96	1.10	1.59	-
MIXOGRAM												
Peak time, min	2.5	2.4	2.3	2.5	2.5	-	2.5	2.4	2.2	2.2	2.8	-
100g BAKING TEST												
Loaf volume, cm3	885	830	760	725	900	-	880	790	820	775	700	-
Evaluation	1	0	0	2	0	-	1	2	0	0	2	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION



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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 Protem Rietpoel Villiersdorp				Albertinia Ashton Camfer Heidelberg Karringmelksrivier Kleinberg Protem Riversdal Swellendam							
WHEAT	ave	min	max	stdev	ave	min	max	stdev				
Protein (12% mb), %	11.8	9.8	13.1	0.88	12.5	10.9	15.1	1.08				
Falling number, sec	355	81	417	73.63	355	321	407	26.00				
1000 Kernel mass (13% mb), g	39.8	36.6	43.5	2.14	38.7	35.7	42.4	2.30				
Hectolitre mass (dirty), kg/hl	79.6	76.2	80.8	1.41	80.2	78.2	82.0	1.05				
Screenings (<1.8mm), %	1.79	0.60	2.54	0.49	1.64	0.48	2.80	0.79				
Total damaged kernels, %	0.68	0.00	2.02	0.59	0.53	0.12	1.28	0.39				
Number of samples	20				11							
CULTIVARS												
	SST 88		56.7		SST 88		41.7					
cultivars	SST 027		25.1		SST 027		34.0					
with highest %	SST 015		15.5		SST 015		21.5					
occurrence	SST 047		1.8		SST 57		1.1					
	PAN 3492		0.6		PAN 3492		0.9					
Number of samples	20				11							
MIXOGRAM (Quadromat)	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	2.7	2.3	3.0	0.18	2.6	2.3	3.3	0.29				
Tail height (6min), mm	48	41	50	2.20	48	46	54	2.16				
Number of samples	20				11							
BÜHLER EXTRACTION, %	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	74.2	74.8	75.7	75.8	-	72.7	75.3	75.1	-	-	-	-
FLOUR												
Protein (12% mb), %	11.9	10.6	9.5	8.2	-	11.9	11.9	10.6	-	-	-	-
Colour, KJ	-2.2	-2.1	-1.9	-2.3	-	-0.7	-1.5	-1.8	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	32.6	27.8	24.4	-	-	33.4	32.8	29.6	-	-	-	-
Dry gluten (14% mb), %	11.8	10.0	8.8	-	-	11.8	11.8	10.9	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	62.4	61.5	60.8	56.4	-	63.1	63.9	63.1	-	-	-	-
Development time, min	6.2	6.0	4.3	2.2	-	4.7	4.8	5.4	-	-	-	-
Stability, min	7.4	7.0	6.7	5.5	-	5.2	6.3	6.3	-	-	-	-
Mixing tolerance index, BU	39	41	38	40	-	64	38	38	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	93	78	74	67	-	102	87	86	-	-	-	-
Maximum height, BU	325	295	320	315	-	360	325	295	-	-	-	-
Extensibility, mm	201	172	160	137	-	201	195	190	-	-	-	-
ALVEOGRAM												
Strength (S), cm ²	34.4	29.4	26.9	20.0	-	32.1	34.6	28.9	-	-	-	-
Stability (P), mm	81	84	86	63	-	79	89	85	-	-	-	-
Distensibility (L), mm	105	80	69	79	-	93	94	81	-	-	-	-
Configuration ratio (P/L)	0.77	1.05	1.25	0.80	-	0.85	0.95	1.05	-	-	-	-
MIXOGRAM												
Peak time, min	2.5	2.4	2.5	2.5	-	2.3	2.3	2.4	-	-	-	-
100g BAKING TEST												
Loaf volume, cm ³	860	835	800	760	-	880	875	845	-	-	-	-
Evaluation	2	0	0	0	-	1	1	0	-	-	-	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION



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SOUTH AFRICAN IRRIGATION WHEAT Eastern Cape and Vaal and Orange river area

PRODUCTION REGION	(7) Eastern Cape Southern Region					(10) Griqualand-West								
Intake silos	Avontuur Humansdorp Paterson Uitenhage					Britstown Douglas Havenga Brug Marydale Modderivier Oranjerivierstasie Prieska Rietrivier Upington								
WHEAT	ave	min	max	stdev		ave	min	max	stdev					
Protein (12% mb), %	12.9	-	-	-		12.4	10.5	14.6	0.92					
Falling number, sec	401	-	-	-		413	372	514	24.92					
1000 Kernel mass (13% mb), g	39.4	-	-	-		42.1	37.5	48.6	3.09					
Hectolitre mass (dirty), kg/hl	81.7	-	-	-		82.4	78.4	85.6	1.95					
Screenings (<1.8mm), %	1.46	-	-	-		1.30	0.28	4.12	0.99					
Total damaged kernels, %	0.34	-	-	-		0.14	0.00	0.40	0.09					
Number of samples	1					32								
CULTIVARS														
cultivars	SST 835 100.0					SST 835 40.0								
with highest % occurrence						Duzi 24.9								
						SST 843 13.4								
						Baviaans 7.5								
						PAN 3434 3.4								
Number of samples	1					32								
MIXOGRAM (Quadromat)	ave	min	max	stdev		ave	min	max	stdev					
Peak time, min	2.4	-	-	-		2.5	1.8	4.6	0.53					
Tail height (6min), mm	51	-	-	-		49	43	54	2.71					
Number of samples	1					32								
BÜHLER EXTRACTION, %	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW		
	76.1	-	-	-	-	-	76.1	75.6	76.2	76.6	78.3	-		
FLOUR														
Protein (12% mb), %	11.7	-	-	-	-	-	11.9	10.7	9.4	11.3	11.5	-		
Colour, KJ	-1.8	-	-	-	-	-	-2.4	-2.3	-2.6	-2.8	-2.7	-		
GLUTEN														
Wet gluten (14% mb), %	32.9	-	-	-	-	-	34.2	30.4	25.6	33.2	34.6	-		
Dry gluten (14% mb), %	11.5	-	-	-	-	-	12.1	10.6	8.9	11.0	11.9	-		
FARINOGRAM														
Water absorption (14% mb), %	64.9	-	-	-	-	-	64.8	64.3	61.1	64.4	64.6	-		
Development time, min	4.8	-	-	-	-	-	5.8	4.7	4.2	5.3	5.3	-		
Stability, min	5.7	-	-	-	-	-	6.5	6.5	6.3	4.7	5.0	-		
Mixing tolerance index, BU	60	-	-	-	-	-	41	43	45	55	53	-		
EXTENSOGRAM (45 min pull)														
Area, cm2	-	-	-	-	-	-	101	87	75	92	95	-		
Maximum height, BU	-	-	-	-	-	-	320	345	325	330	350	-		
Extensibility, mm	-	-	-	-	-	-	215	184	163	198	192	-		
ALVEOGRAM														
Strength (S), cm2	39.0	-	-	-	-	-	37.5	35.6	29.1	33.5	33.6	-		
Stability (P), mm	100	-	-	-	-	-	90	95	78	85	82	-		
Distensibility (L), mm	85	-	-	-	-	-	92	80	87	92	103	-		
Configuration ratio (P/L)	1.18	-	-	-	-	-	0.98	1.19	0.90	0.92	0.80	-		
MIXOGRAM														
Peak time, min	2.3	-	-	-	-	-	2.2	2.7	2.4	2.0	2.0	-		
100g BAKING TEST														
Loaf volume, cm3	925	-	-	-	-	-	935	935	815	910	965	-		
Evaluation	0	-	-	-	-	-	0	0	0	0	0	-		

RHEOLOGICAL GRAPHS PER PRODUCTION REGION



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

**MAINLY IRRIGATION WHEAT
North-West Province**

PRODUCTION REGION	(11) Vaalharts					(12) North-West Western Region						
Intake silos	Barkly-West Hartswater Jan Kemp Magogong Taung					Bloubank		Vryburg Vryhof				
						Buhmannsdrif						
						Kameel						
						Kraaipan						
						Madibogo						
						Mafikeng						
						Mareetsane						
						Piet Plessis						
						Springbokpan						
						Vergeleë						
WHEAT												
	ave	min	max	stdev		ave	min	max	stdev			
Protein (12% mb), %	11.9	10.9	12.6	0.53		12.8	11.4	14.8	1.33			
Falling number, sec	395	381	423	12.7		405	375	440	26.86			
1000 Kernel mass (13% mb), g	41.9	31.8	46.2	3.34		38.8	34.1	40.6	2.68			
Hectolitre mass (dirty), kg/hl	80.9	79.2	82.4	0.99		81.4	80.3	81.9	0.66			
Screenings (<1.8mm), %	2.30	1.46	3.32	0.55		1.32	0.87	1.99	0.51			
Total damaged kernels, %	0.30	0.06	0.66	0.16		0.37	0.22	0.64	0.17			
Number of samples	14					5						
CULTIVARS												
		Duzi	36.0			SST 835	39.0					
cultivars		SST 835	28.3			SST 843	36.0					
with highest %		SST 843	16.6			Duzi	15.4					
occurrence		PAN 3434	6.5			CRN 826	8.4					
		Baviaans	6.0			SST 825	1.2					
Number of samples	14					5						
MIXOGRAM (Quadromat)												
	ave	min	max	stdev		ave	min	max	stdev			
Peak time, min	2.7	2.5	2.8	0.13		3.1	2.4	4.3	0.78			
Tail height (6min), mm	49	47	52	1.44		55	49	67	7.22			
Number of samples	14					5						
BÜHLER EXTRACTION, %												
	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	76.8	76.5	76.3	75.9	-	-	76.1	76.0	-	-	-	-
FLOUR												
Protein (12% mb), %	11.5	10.5	9.7	10.9	-	-	13.1	10.7	-	-	-	-
Colour, KJ	-2.3	-2.5	-2.6	-2.3	-	-	-2.5	-2.6	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	31.9	28.9	27.6	30.5	-	-	34.9	29.7	-	-	-	-
Dry gluten (14% mb), %	10.7	9.7	9.2	10.2	-	-	12.5	9.9	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	63.2	62.6	62.9	64.2	-	-	64.8	62.6	-	-	-	-
Development time, min	5.5	4.7	4.8	4.5	-	-	10.2	4.8	-	-	-	-
Stability, min	6.2	5.5	6.3	5.1	-	-	12.4	6.1	-	-	-	-
Mixing tolerance index, BU	38	52	43	48	-	-	26	43	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm2	89	79	81	76	-	-	145	96	-	-	-	-
Maximum height, BU	290	300	310	285	-	-	400	335	-	-	-	-
Extensibility, mm	218	179	170	187	-	-	252	199	-	-	-	-
ALVEOGRAM												
Strength (S), cm2	35.6	31.6	28.0	32.0	-	-	57.6	31.2	-	-	-	-
Stability (P), mm	78	81	92	87	-	-	103	80	-	-	-	-
Distensibility (L), mm	114	92	64	86	-	-	113	88	-	-	-	-
Configuration ratio (P/L)	0.68	0.88	1.44	1.01	-	-	0.91	0.91	-	-	-	-
MIXOGRAM												
Peak time, min	2.3	2.3	2.3	2.2	-	-	3.0	2.5	-	-	-	-
100g BAKING TEST												
Loaf volume, cm3	900	820	810	825	-	-	900	875	-	-	-	-
Evaluation	0	0	0	1	-	-	3	0	-	-	-	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION



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

PRODUCTION REGION	(14) North-West Southern Region					(15) North-West South-Eastern Region								
	Intake silos													
	Amalia Barberspan Delareyville Excelsior Geysdorp Hallat's Hope Migdol Nooitgedacht Schweizer-Reneke Taaibospan					Bloemhof Christiana Hertzogville Hoopstad Kingwood								
WHEAT	ave	min	max	stdev		ave	min	max	stdev					
Protein (12% mb), %	11.6	10.8	13.7	1.43		11.9	10.5	13.0	0.75					
Falling number, sec	415	410	420	4.20		375	267	460	74.42					
1000 Kernel mass (13% mb), g	39.1	26.7	47.5	9.22		38.1	33.3	46.8	3.98					
Hectolitre mass (dirty), kg/hl	79.7	74.1	84.3	4.20		81.2	79.7	82.8	0.98					
Screenings (<1.8mm), %	4.28	3.18	6.54	1.57		1.19	0.44	2.37	0.78					
Total damaged kernels, %	0.14	0.00	0.24	0.10		0.08	0.00	0.20	0.08					
Number of samples	4					9								
CULTIVARS														
	SST 835 39.3					SST 835 23.4								
cultivars	Baviaans 26.3					PAN 3120 15.6								
with highest %	PAN 3434 11.0					Gariiep 15.1								
occurrence	SST 843 9.3					Duzi 12.4								
	CRN 826 7.8					SST 843 9.7								
Number of samples	4					9								
MIXOGRAM (Quadromat)	ave	min	max	stdev		ave	min	max	stdev					
Peak time, min	2.9	2.3	3.3	0.48		3.0	2.2	3.7	0.46					
Tail height (6min), mm	50	46	54	3.32		49	47	52	2.07					
Number of samples	4					9								
BÜHLER EXTRACTION, %	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW		
	-	-	-	76.0	74.3	-	74.4	74.9	74.1	-	-	-		
FLOUR														
Protein (12% mb), %	-	-	-	9.8	11.3	-	11.9	10.4	10.1	-	-	-		
Colour, KJ	-	-	-	-2.7	-2.5	-	-2.2	-2.4	-2.6	-	-	-		
GLUTEN														
Wet gluten (14% mb), %	-	-	-	27.6	30.2	-	33.3	28.7	26.4	-	-	-		
Dry gluten (14% mb), %	-	-	-	9.5	10.6	-	11.7	9.8	9.2	-	-	-		
FARINOGRAM														
Water absorption (14% mb), %	-	-	-	62.2	61.7	-	65.7	63.9	62.0	-	-	-		
Development time, min	-	-	-	4.5	6.0	-	5.7	4.9	5.7	-	-	-		
Stability, min	-	-	-	5.9	7.8	-	7.2	6.2	11.3	-	-	-		
Mixing tolerance index, BU	-	-	-	47	41	-	34	43	21	-	-	-		
EXTENSOGRAM (45 min pull)														
Area, cm2	-	-	-	84	123	-	97	84	105	-	-	-		
Maximum height, BU	-	-	-	325	400	-	340	320	425	-	-	-		
Extensibility, mm	-	-	-	178	213	-	201	186	177	-	-	-		
ALVEOGRAM														
Strength (S), cm2	-	-	-	29.4	39.3	-	39.6	33.3	39.8	-	-	-		
Stability (P), mm	-	-	-	80	81	-	103	94	98	-	-	-		
Distensibility (L), mm	-	-	-	83	116	-	79	73	83	-	-	-		
Configuration ratio (P/L)	-	-	-	0.96	0.70	-	1.30	1.29	1.18	-	-	-		
MIXOGRAM														
Peak time, min	-	-	-	2.6	2.7	-	2.5	2.5	3.5	-	-	-		
100g BAKING TEST														
Loaf volume, cm3	-	-	-	810	875	-	895	830	715	-	-	-		
Evaluation	-	-	-	0	0	-	1	0	3	-	-	-		

RHEOLOGICAL GRAPHS PER PRODUCTION REGION



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

PRODUCTION REGION	(16) North-West Central Eastern Region						(17) North-West Central Northern Region (Ottosdal)					
	Intake silos						Bospoort Lethabong (Hartbeesfontein) Kleinharts Melliodora Ottosdal Rostrataville Vermaas Werda					
WHEAT	ave	min	max	stdev	ave	min	max	stdev	ave	min	max	stdev
Protein (12% mb), %	11.8	11.2	12.5	0.67	11.9	10.2	13.0	0.94	11.9	10.2	13.0	0.94
Falling number, sec	434	428	444	8.96	416	371	455	32.73	416	371	455	32.73
1000 Kernel mass (13% mb), g	39.8	37.5	41.4	2.03	40.8	34.3	50.7	5.85	40.8	34.3	50.7	5.85
Hectolitre mass (dirty), kg/hl	78.9	76.9	80.1	1.74	80.6	79.2	82.2	1.12	80.6	79.2	82.2	1.12
Screenings (<1.8mm), %	2.17	1.88	2.54	0.34	1.12	0.52	1.40	0.29	1.12	0.52	1.40	0.29
Total damaged kernels, %	0.17	0.12	0.20	0.04	0.19	0.06	0.32	0.11	0.19	0.06	0.32	0.11
Number of samples	3						8					
CULTIVARS	SST 835 42.0						SST 835 48.6					
cultivars	SST 843 33.7						Baviaans 20.8					
with highest %	Duzi 15.3						SST 843 15.4					
occurrence	CRN 826 9.0						Duzi 6.8					
Number of samples	3						8					
MIXOGRAM (Quadromat)	ave	min	max	stdev	ave	min	max	stdev	ave	min	max	stdev
Peak time, min	2.6	2.3	3.2	0.52	2.9	2.3	3.3	0.36	2.9	2.3	3.3	0.36
Tail height (6min), mm	46	44	48	2.08	50	42	54	3.81	50	42	54	3.81
Number of samples	3						8					
BÜHLER EXTRACTION, %	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	75.2	75.7	-	-	-	-	75.4	77.4	76.3	-	-	-
FLOUR												
Protein (12% mb), %	11.8	10.1	-	-	-	-	11.7	10.2	8.7	-	-	-
Colour, KJ	-2.1	-2.3	-	-	-	-	-2.2	-2.6	-2.7	-	-	-
GLUTEN												
Wet gluten (14% mb), %	33.2	26.9	-	-	-	-	31.8	28.1	21.7	-	-	-
Dry gluten (14% mb), %	11.3	9.2	-	-	-	-	11.2	9.5	7.8	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	62.5	60.5	-	-	-	-	63.3	61.9	57.5	-	-	-
Development time, min	5.0	4.8	-	-	-	-	5.7	4.5	3.0	-	-	-
Stability, min	5.4	5.5	-	-	-	-	8.1	6.4	7.4	-	-	-
Mixing tolerance index, BU	48	47	-	-	-	-	37	49	26	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	-	87	-	-	-	-	119	86	76	-	-	-
Maximum height, BU	-	335	-	-	-	-	375	345	405	-	-	-
Extensibility, mm	-	177	-	-	-	-	219	175	135	-	-	-
ALVEOGRAM												
Strength (S), cm ²	34.1	26.6	-	-	-	-	41.9	30.9	22.2	-	-	-
Stability (P), mm	74	73	-	-	-	-	87	90	70	-	-	-
Distensibility (L), mm	119	86	-	-	-	-	111	73	63	-	-	-
Configuration ratio (P/L)	0.62	0.85	-	-	-	-	0.78	1.23	1.11	-	-	-
MIXOGRAM												
Peak time, min	2.3	2.5	-	-	-	-	2.7	2.7	2.9	-	-	-
100g BAKING TEST												
Loaf volume, cm ³	905	805	-	-	-	-	825	800	775	-	-	-
Evaluation	0	0	-	-	-	-	2	0	0	-	-	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION



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

PRODUCTION REGION	(18) North-West Central Region (Ventersdorp)				(19) North-West Central Region (Lichtenburg)							
	ave	min	max	stdev	ave	min	max	stdev				
Intake silos	Bodenstein Buckingham Coligny Enselspruit Makokskraal Potchefstroom Ventersdorp				Grootpan Halfpad Hibernia Lichtenburg Lottiehalte Lusthof							
WHEAT												
Protein (12% mb), %	12.7	11.2	14.2	2.12	11.9	10.3	12.8	0.79				
Falling number, sec	386	360	411	36.06	389	333	413	26.17				
1000 Kernel mass (13% mb), g	38.7	38.6	38.7	0.07	37.5	36.0	39.7	1.15				
Hectolitre mass (dirty), kg/hl	79.6	78.5	80.6	1.48	81.2	79.6	82.1	0.92				
Screenings (<1.8mm), %	1.31	1.22	1.40	0.13	1.88	1.48	2.15	0.27				
Total damaged kernels, %	0.35	0.30	0.40	0.07	0.26	0.12	0.60	0.15				
Number of samples	2				8							
CULTIVARS												
cultivars	SST 843 61.5				SST 835 52.5							
with highest % occurrence	SST 88 38.5				SST 843 37.0							
					CRN 826 6.4							
					Olifants 3.4							
					SST 876 0.8							
Number of samples	2				8							
MIXOGRAM (Quadromat)												
Peak time, min	ave	min	max	stdev	ave	min	max	stdev				
Tail height (6min), mm	4.2	3.2	5.2	1.41	3.4	2.8	5.0	0.81				
Number of samples	2				8							
BÜHLER EXTRACTION, %												
	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	75.4	75.4	-	-	-	-	75.6	75.7	75.6	-	-	-
FLOUR												
Protein (12% mb), %	13.7	10.1	-	-	-	-	11.9	10.9	9.5	-	-	-
Colour, KJ	-2.3	-2.2	-	-	-	-	-2.3	-2.4	-2.1	-	-	-
GLUTEN												
Wet gluten (14% mb), %	33.1	26.0	-	-	-	-	31.7	29.0	25.9	-	-	-
Dry gluten (14% mb), %	12.4	9.6	-	-	-	-	11.0	10.1	9.0	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	64.9	60.5	-	-	-	-	63.8	63.0	62.4	-	-	-
Development time, min	16.4	4.7	-	-	-	-	7.8	6.5	5.5	-	-	-
Stability, min	17.6	9.0	-	-	-	-	12.7	8.2	7.2	-	-	-
Mixing tolerance index, BU	-	25	-	-	-	-	20	35	34	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm2	139	108	-	-	-	-	148	119	-	-	-	-
Maximum height, BU	475	435	-	-	-	-	430	390	-	-	-	-
Extensibility, mm	204	184	-	-	-	-	239	217	-	-	-	-
ALVEOGRAM												
Strength (S), cm2	81.0	33.5	-	-	-	-	51.5	37.6	26.9	-	-	-
Stability (P), mm	136	85	-	-	-	-	96	93	94	-	-	-
Distensibility (L), mm	102	83	-	-	-	-	112	84	55	-	-	-
Configuration ratio (P/L)	1.33	1.02	-	-	-	-	0.86	1.11	1.71	-	-	-
MIXOGRAM												
Peak time, min	4.8	3.2	-	-	-	-	3.2	2.7	2.7	-	-	-
100g BAKING TEST												
Loaf volume, cm3	980	850	-	-	-	-	760	820	720	-	-	-
Evaluation	2	0	-	-	-	-	5	1	2	-	-	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION



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

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

PRODUCTION REGION	(20) North-West Eastern Region				(21) Free State North-Western Region (Viljoenskroon)														
	Intake silos	Battery	Boons	Brits	Derby	Koster	Rustenburg	Swartruggens	Syferbult	Attie	Groenebloem	Heuningspruit	Koppies	Rooiwal	Vierfontein	Viljoenskroon	Vredefort	Weiveld	
WHEAT																			
	ave	min	max	stdev	ave	min	max	stdev											
Protein (12% mb), %	11.6	10.6	13.2	0.81	11.8	10.6	13.5	1.07											
Falling number, sec	411	357	521	40.75	397	351	437	30.58											
1000 Kernel mass (13% mb), g	39.7	33.9	46.1	2.75	37.8	32.7	42.7	3.76											
Hectolitre mass (dirty), kg/hl	80.3	73.0	84.0	2.94	81.7	79.8	82.6	1.19											
Screenings (<1.8mm), %	2.42	0.27	5.84	1.86	1.91	1.49	2.52	0.42											
Total damaged kernels, %	0.31	0.00	0.88	0.25	0.18	0.08	0.32	0.09											
Number of samples	15				5														
CULTIVARS																			
		SST 835	40.3			SST 835	50.8												
cultivars		Duzi	17.3			SST 843	25.6												
with highest %		SST 843	16.5			Elands	16.4												
occurrence		Kariega	12.8			CRN 826	4.0												
		CRN 826	4.7			SST 347, Baviaans	1.6												
Number of samples	15				5														
MIXOGRAM (Quadromat)																			
	ave	min	max	stdev	ave	min	max	stdev											
Peak time, min	3.1	2.3	4.8	0.72	3.1	2.3	4.5	0.87											
Tail height (6min), mm	50	43	65	5.07	52	47	59	5.55											
Number of samples	15				5														
BÜHLER EXTRACTION, %																			
	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW							
	75.8	76.5	76.4	-	76.0	77.0	74.8	76.0	75.2	-	-	-							
FLOUR																			
Protein (12% mb), %	11.6	10.6	9.3	-	10.4	10.2	13.1	10.9	9.6	-	-	-							
Colour, KJ	-2.3	-2.3	-2.2	-	-2.5	-1.8	-2.2	-1.6	-2.0	-	-	-							
GLUTEN																			
Wet gluten (14% mb), %	30.8	29.5	24.6	-	28.8	28.0	32.5	30.3	25.2	-	-	-							
Dry gluten (14% mb), %	11.2	10.3	8.5	-	9.5	9.5	12.4	10.5	8.9	-	-	-							
FARINOGRAM																			
Water absorption (14% mb), %	61.5	62.3	59.7	-	62.2	62.0	63.4	64.3	61.4	-	-	-							
Development time, min	7.0	6.0	5.5	-	5.2	4.2	10.5	5.5	5.7	-	-	-							
Stability, min	10.5	7.7	7.2	-	5.2	4.3	16.5	5.9	6.8	-	-	-							
Mixing tolerance index, BU	30	44	42	-	50	56	15	46	47	-	-	-							
EXTENSOGRAM (45 min pull)																			
Area, cm2	148	103	88	-	75	74	126	99	101	-	-	-							
Maximum height, BU	475	400	370	-	285	260	465	360	435	-	-	-							
Extensibility, mm	218	185	176	-	188	193	197	194	160	-	-	-							
ALVEOGRAM																			
Strength (S), cm2	45.1	35.2	28.9	-	29.1	24.6	57.6	36.7	28.3	-	-	-							
Stability (P), mm	89	89	75	-	74	69	104	95	92	-	-	-							
Distensibility (L), mm	106	85	89	-	99	95	104	84	60	-	-	-							
Configuration ratio (P/L)	0.84	1.05	0.84	-	0.75	0.73	1.00	1.13	1.53	-	-	-							
MIXOGRAM																			
Peak time, min	3.3	2.8	2.8	-	2.3	2.3	3.8	2.5	2.8	-	-	-							
100g BAKING TEST																			
Loaf volume, cm3	810	805	730	-	740	795	775	790	770	-	-	-							
Evaluation	3	1	1	-	3	1	6	2	0	-	-	-							

RHEOLOGICAL GRAPHS PER PRODUCTION REGION



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SOUTH AFRICAN

SUMMER RAINFALL WHEAT (AND IRRIGATION)

Free State Province (Central)

PRODUCTION REGION	(26) Free State South-Eastern Region (Senekal)					(27) Free State Northern Region						
	ave	min	max	stdev		ave	min	max	stdev			
Intake silos	Arlington Kaallaagte Libertas Marquard Meets Monte Video Senekal Steynsrus					Gottenburg Heilbron Hoogte Mooigeleë Petrus Steyn Wolwehoek						
WHEAT												
Protein (12% mb), %	13.2	12.2	14.6	0.63		13.6	11.7	14.7	1.19			
Falling number, sec	305	104	466	104.21		328	114	498	112.80			
1000 Kernel mass (13% mb), g	39.1	35.4	42.2	1.98		37.8	35.6	40.1	1.86			
Hectolitre mass (dirty), kg/hl	80.2	74.3	82.2	2.40		79.1	75.7	81.0	1.60			
Screenings (<1.8mm), %	1.22	0.47	2.49	0.69		1.10	0.24	1.81	0.57			
Total damaged kernels, %	0.88	0.00	6.48	1.71		0.85	0.50	1.24	0.22			
Number of samples	13					8						
CULTIVARS												
cultivars with highest % occurrence	Elands		44.6			Elands		50.4				
	Matlabas		14.8			SST 347		15.7				
	SST 356		13.2			Matlabas		6.3				
	PAN 3120		6.1			SST 835		5.7				
Number of samples	13					8						
MIXOGRAM (Quadromat)												
Peak time, min	ave	min	max	stdev		ave	min	max	stdev			
Tail height (6min), mm	3.7	2.8	4.7	0.62		3.7	3.2	4.5	0.40			
Number of samples	13					8						
BÜHLER EXTRACTION, %	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	74.8	-	-	-	72.8	74.7	74.7	-	-	-	-	73.5
FLOUR												
Protein (12% mb), %	12.3	-	-	-	12.7	12.3	13.3	10.7	-	-	-	14.1
Colour, KJ	-0.9	-	-	-	1.7	2.7	0.3	-1.4	-	-	-	2.8
GLUTEN												
Wet gluten (14% mb), %	32.8	-	-	-	33.0	29.9	35.6	26.9	-	-	-	37.2
Dry gluten (14% mb), %	11.5	-	-	-	11.6	11.0	13.2	9.3	-	-	-	13.3
FARINOGRAM												
Water absorption (14% mb), %	65.6	-	-	-	64.5	63.9	66.5	62.3	-	-	-	67.2
Development time, min	8.0	-	-	-	3.0	2.0	7.2	6.7	-	-	-	8.8
Stability, min	11.3	-	-	-	10.6	7.6	11.8	10.4	-	-	-	10.9
Mixing tolerance index, BU	28	-	-	-	24	33	20	25	-	-	-	32
EXTENSOGRAM (45 min pull)												
Area, cm ²	110	-	-	-	90	110	140	106	-	-	-	119
Maximum height, BU	390	-	-	-	480	440	445	450	-	-	-	365
Extensibility, mm	193	-	-	-	143	183	215	163	-	-	-	225
ALVEOGRAM												
Strength (S), cm ²	42.7	-	-	-	39.6	45.0	50.3	35.2	-	-	-	48.6
Stability (P), mm	122	-	-	-	134	120	128	107	-	-	-	106
Distensibility (L), mm	61	-	-	-	46	63	69	62	-	-	-	85
Configuration ratio (P/L)	2.00	-	-	-	2.91	1.90	1.86	1.73	-	-	-	1.25
MIXOGRAM												
Peak time, min	3.1	-	-	-	3.5	4.4	3.3	3.3	-	-	-	3.4
100g BAKING TEST												
Loaf volume, cm ³	860	-	-	-	720	870	940	740	-	-	-	1035
Evaluation	2	-	-	-	6	2	2	3	-	-	-	1

RHEOLOGICAL GRAPHS PER PRODUCTION REGION



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SOUTH AFRICAN

SUMMER RAINFALL WHEAT (AND IRRIGATION)

Free State Province (North-Western)

PRODUCTION REGION	(22) Free-State North-Western Region (Bothaville)				(23) Free-State North-Western Region (Bultfontein)							
	ave	min	max	stdev	ave	min	max	stdev				
Intake silos	Allanridge Bothaville Mirage Odendaalsrus Schoonspruit Schuttendraai				Bultfontein Losdoorns Protespan Tierfontein Wesselsbron Willemsrust							
WHEAT												
Protein (12% mb), %	11.7	9.5	13.6	1.61	11.4	9.7	13.6	1.13				
Falling number, sec	357	316	404	39.78	362	285	510	57.39				
1000 Kernel mass (13% mb), g	36.3	34.8	38.3	1.47	36.5	30.9	41.8	3.39				
Hectolitre mass (dirty), kg/hl	81.4	80.0	82.4	0.87	81.4	77.7	84.1	1.49				
Screenings (<1.8mm), %	1.51	0.85	2.03	0.40	1.75	0.23	3.17	0.77				
Total damaged kernels, %	0.16	0.00	0.26	0.10	0.27	0.08	0.80	0.15				
Number of samples	6				22							
CULTIVARS												
cultivars with highest % occurrence	PAN 3120		34.3		PAN 3120		29.1					
	SST 835		16.8		SST 835		20.4					
	SST 347		10.0		CRN 826		11.0					
	PAN 3355		9.2		PAN 3118		10.2					
Number of samples	6				22							
MIXOGRAM (Quadromat)												
Peak time, min	ave	min	max	stdev	ave	min	max	stdev				
Tail height (6min), mm	3.4	2.5	4.7	0.88	3.1	2.4	3.8	0.42				
Number of samples	6				22							
BÜHLER EXTRACTION, %												
	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	74.1	72.6	73.3	72.0	-	-	73.8	73.2	73.8	73.7	-	-
FLOUR												
Protein (12% mb), %	12.2	9.9	9.1	7.8	-	-	11.8	10.4	9.2	8.8	-	-
Colour, KJ	-2.0	-2.3	-1.6	-2.2	-	-	-2.3	-2.4	-2.3	-2.1	-	-
GLUTEN												
Wet gluten (14% mb), %	34.2	26.8	21.3	-	-	-	31.0	27.7	24.4	21.9	-	-
Dry gluten (14% mb), %	12.0	9.0	7.6	-	-	-	11.2	10.0	8.7	7.6	-	-
FARINOGRAM												
Water absorption (14% mb), %	67.1	62.8	63.4	62.6	-	-	63.0	63.4	62.0	61.5	-	-
Development time, min	7.2	5.5	1.9	1.7	-	-	7.2	6.0	5.5	3.7	-	-
Stability, min	8.4	7.7	1.6	1.3	-	-	10.1	8.0	8.6	7.4	-	-
Mixing tolerance index, BU	35	42	62	73	-	-	32	38	33	33	-	-
EXTENSOGRAM (45 min pull)												
Area, cm2	108	-	-	-	-	-	119	95	80	80	-	-
Maximum height, BU	330	-	-	-	-	-	410	390	355	380	-	-
Extensibility, mm	223	-	-	-	-	-	202	172	162	143	-	-
ALVEOGRAM												
Strength (S), cm2	43.9	32.6	28.7	21.3	-	-	40.8	34.9	29.7	26.3	-	-
Stability (P), mm	110	102	129	125	-	-	96	107	104	108	-	-
Distensibility (L), mm	83	64	35	28	-	-	85	63	54	41	-	-
Configuration ratio (P/L)	1.33	1.59	3.69	4.46	-	-	1.13	1.70	1.93	2.63	-	-
MIXOGRAM												
Peak time, min	2.7	2.5	3.0	3.7	-	-	3.0	2.8	2.8	2.8	-	-
100g BAKING TEST												
Loaf volume, cm3	815	740	640	570	-	-	795	735	655	685	-	-
Evaluation	4	2	4	5	-	-	4	3	4	2	-	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION



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

PRODUCTION REGION	(25) Free State South-Western Region (Bethlehem)				(28) Free State Eastern Region							
	Intake silos				Intake silos							
	Bethlehem				Afrikaskop			Tweeling				
	Clocolan				Ascent			Villiers				
	De Wetsdorp				Cornelia			Vrede				
	Ficksburg				Daniëlsrus			Warden				
	Fouriesburg				Eeram			Windfield				
	Marseilles				Frankfort							
	Modderpoort				Harrismith							
	Slabberts				Jim Fouché							
	Tweespruit				Kransfontein							
	Westminster				Memel							
	Zastron				Reitz							
WHEAT												
	ave	min	max	stdev	ave	min	max	stdev				
Protein (12% mb), %	13.1	11.2	15.3	0.79	13.1	11.5	15.3	0.85				
Falling number, sec	240	89	379	84.88	298	63	439	92.58				
1000 Kernel mass (13% mb), g	39.4	31.8	43.4	3.04	39.5	35.0	45.3	2.41				
Hectolitre mass (dirty), kg/hl	78.2	72.4	82.0	2.42	78.8	72.9	83.3	2.46				
Screenings (<1.8mm), %	1.72	0.22	4.74	0.98	1.24	0.26	3.72	0.77				
Total damaged kernels, %	0.74	0.08	3.64	0.76	0.58	0.08	5.68	0.99				
Number of samples	25				31							
CULTIVARS												
	Elands 28.7				Elands 37.5							
cultivars	SST 356 25.5				Matlabas 18.2							
with highest %	Matlabas 24.3				SST 835 15.8							
occurrence	SST 835 7.6				SST 356 13.0							
	SST 347 5.4				Duzi 3.9							
Number of samples	25				31							
MIXOGRAM (Quadromat)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	3.8	2.6	6.8	0.99	3.4	2.4	4.5	0.48				
Tail height (6min), mm	54	42	65	4.60	54	46	61	3.90				
Number of samples	25				31							
BÜHLER EXTRACTION, %												
	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	73.7	73.8	73.1	74.5	74.0	73.1	74.0	74.5	73.4	72.7	73.5	72.9
FLOUR												
Protein (12% mb), %	12.3	11.7	11.9	12.0	11.2	11.9	11.8	11.1	12.9	11.1	14.3	12.5
Colour, KJ	-1.6	-1.1	-0.3	-1.2	-0.1	0.7	-1.4	-0.5	1.6	1.8	-0.6	0.7
GLUTEN												
Wet gluten (14% mb), %	33.1	31.3	30.7	32.3	28.6	31.4	31.6	29.3	35.5	28.6	39.2	33.6
Dry gluten (14% mb), %	11.7	10.8	11.2	11.3	10.0	11.2	10.9	10.0	12.5	9.4	14.2	11.9
FARINOGRAM												
Water absorption (14% mb), %	65.1	66.2	63.7	65.1	64.4	63.4	65.2	63.4	67.8	64.0	67.2	65.3
Development time, min	7.5	6.2	6.2	8.3	2.4	3.2	7.0	6.2	7.0	2.2	6.7	4.2
Stability, min	13.4	9.2	11.2	11.1	7.8	6.4	9.4	9.0	11.6	9.0	14.7	7.9
Mixing tolerance index, BU	18	22	21	29	29	39	32	36	22	16	21	33
EXTENSOGRAM (45 min pull)												
Area, cm ²	117	98	105	122	126	124	92	98	110	89	121	103
Maximum height, BU	420	350	405	410	435	375	350	410	410	350	365	400
Extensibility, mm	198	188	185	210	195	230	188	172	195	185	236	184
ALVEOGRAM												
Strength (S), cm ²	50.3	37.3	42.8	50.6	48.0	42.8	42.5	37.3	49.2	35.5	67.9	43.9
Stability (P), mm	113	107	105	111	124	89	113	101	126	94	110	105
Distensibility (L), mm	86	67	74	92	70	93	72	74	74	74	121	78
Configuration ratio (P/L)	1.31	1.60	1.42	1.21	1.77	0.96	1.57	1.36	1.70	1.27	0.91	1.35
MIXOGRAM												
Peak time, min	3.3	2.4	3.5	3.3	3.8	3.5	2.7	3.2	3.0	3.3	3.2	3.2
100g BAKING TEST												
Loaf volume, cm ³	880	850	800	900	800	925	835	825	935	935	1040	890
Evaluation	2	2	4	1	2	0	2	1	1	0	1	2

RHEOLOGICAL GRAPHS PER PRODUCTION REGION



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SOUTH AFRICAN

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

OTHER SUMMER RAINFALL AND IRRIGATION WHEAT

Mpumalanga

(29)
Mpumalanga
Southern Region

PRODUCTION REGION	(24) Free State Central Region				(29) Mpumalanga Southern Region							
Intake silos	Bloemfontein Brandfort De Brug Geneva Hennenman Koffiefontein Kroonstad Petrusburg Theunissen Van Tonder	Welgeleë Winburg			Balfour Greylingstad Grootvlei Harvard Holmdene Leeuspruit Platrand Standerton Val							
WHEAT												
	ave	min	max	stdev	ave	min	max	stdev				
Protein (12% mb), %	12.0	10.0	13.6	1.08	12.6	-	-	-				
Falling number, sec	356	276	408	40.76	421	-	-	-				
1000 Kernel mass (13% mb), g	35.5	29.4	46.3	3.92	39.7	-	-	-				
Hectolitre mass (dirty), kg/hl	80.1	76.6	81.6	1.46	85.0	-	-	-				
Screenings (<1.8mm), %	1.66	0.53	4.04	0.91	0.96	-	-	-				
Total damaged kernels, %	0.45	0.08	1.46	0.40	0.16	-	-	-				
Number of samples	16				1							
CULTIVARS												
		PAN 3120	38.7		SST 843	55.0						
cultivars with highest % occurrence		PAN 3118	16.8		SST 835	45.0						
		Gariep	11.6									
		SST 835	5.8									
		PAN 3355	5.6									
Number of samples	16				1							
MIXOGRAM (Quadromat)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	3.4	2.8	4.2	0.48	2.8	-	-	-				
Tail height (6min), mm	52	49	56	2.19	48	-	-	-				
Number of samples	16				1							
	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
BÜHLER EXTRACTION, %	73.2	73.9	73.4	-	70.8	72.4	76.8	-	-	-	-	-
FLOUR												
Protein (12% mb), %	11.6	10.2	9.1	-	12.4	11.7	11.6	-	-	-	-	-
Colour, KJ	-2.1	-2.3	-2.9	-	-1.7	-1.3	-2.3	-	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	31.8	26.5	22.5	-	34.1	30.3	32.3	-	-	-	-	-
Dry gluten (14% mb), %	11.8	9.6	8.2	-	12.2	11.2	11.4	-	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	64.9	62.1	60.3	-	67.8	64.8	65.4	-	-	-	-	-
Development time, min	6.4	6.2	7.5	-	7.8	8.3	6.7	-	-	-	-	-
Stability, min	10.0	9.1	12.5	-	10.7	9.7	6.6	-	-	-	-	-
Mixing tolerance index, BU	24	34	23	-	31	39	43	-	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm2	100	112	103	-	-	131	101	-	-	-	-	-
Maximum height, BU	375	430	470	-	-	445	365	-	-	-	-	-
Extensibility, mm	195	179	160	-	-	204	199	-	-	-	-	-
ALVEOGRAM												
Strength (S), cm2	43.9	35.0	35.8	-	48.8	47.9	41.9	-	-	-	-	-
Stability (P), mm	109	102	110	-	120	110	101	-	-	-	-	-
Distensibility (L), mm	82	65	59	-	82	85	89	-	-	-	-	-
Configuration ratio (P/L)	1.33	1.57	1.86	-	1.46	1.29	1.13	-	-	-	-	-
MIXOGRAM												
Peak time, min	2.8	3.2	3.6	-	2.5	2.8	2.7	-	-	-	-	-
100g BAKING TEST												
Loaf volume, cm3	930	855	665	-	825	825	920	-	-	-	-	-
Evaluation	0	0	3	-	4	2	0	-	-	-	-	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION



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SOUTH AFRICAN OTHER SUMMER RAINFALL WHEAT AND IRRIGATION Mpumalanga

PRODUCTION REGION	(30) Mpumalanga Eastern Region				(32) Mpumalanga Western Region							
	ave	min	max	stdev	ave	min	max	stdev				
Intake silos	Amersfoort Badplaas Carolina Davel Ermelo Estancia Lothair Maizefield Mkondo Morgenzon Overvaal Panbult				Argent Dryden Endicott Elof Hawerklip Kendal Ogies							
WHEAT												
Protein (12% mb), %	13.0	-	-	-	12.2	-	-	-				
Falling number, sec	407	-	-	-	396	-	-	-				
1000 Kernel mass (13% mb), g	42.7	-	-	-	41.1	-	-	-				
Hectolitre mass (dirty), kg/hl	76.9	-	-	-	82.6	-	-	-				
Screenings (<1.8mm), %	0.32	-	-	-	1.31	-	-	-				
Total damaged kernels, %	0.32	-	-	-	0.18	-	-	-				
Number of samples	1				1							
CULTIVARS												
cultivars with highest % occurrence	Kariega 100.0				SST 835 90.0 SST 843 10.0							
Number of samples	1				1							
MIXOGRAM (Quadromat)												
Peak time, min	ave	min	max	stdev	ave	min	max	stdev				
Tail height (6min), mm	4.2	-	-	-	3.5	-	-	-				
Number of samples	1				1							
BÜHLER EXTRACTION, %												
	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	-	-	-	-	-	77.0	76.8	-	-	-	-	-
FLOUR												
Protein (12% mb), %	-	-	-	-	-	11.9	11.2	-	-	-	-	-
Colour, KJ	-	-	-	-	-	0.3	-2.1	-	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	-	-	-	-	-	25.1	29.8	-	-	-	-	-
Dry gluten (14% mb), %	-	-	-	-	-	8.7	10.6	-	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	-	-	-	-	-	62.4	62.5	-	-	-	-	-
Development time, min	-	-	-	-	-	2.5	7.7	-	-	-	-	-
Stability, min	-	-	-	-	-	8.4	9.8	-	-	-	-	-
Mixing tolerance index, BU	-	-	-	-	-	24	37	-	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm2	-	-	-	-	-	-	124	-	-	-	-	-
Maximum height, BU	-	-	-	-	-	-	460	-	-	-	-	-
Extensibility, mm	-	-	-	-	-	-	200	-	-	-	-	-
ALVEOGRAM												
Strength (S), cm2	-	-	-	-	-	30.6	45.6	-	-	-	-	-
Stability (P), mm	-	-	-	-	-	139	97	-	-	-	-	-
Distensibility (L), mm	-	-	-	-	-	33	102	-	-	-	-	-
Configuration ratio (P/L)	-	-	-	-	-	4.21	0.95	-	-	-	-	-
MIXOGRAM												
Peak time, min	-	-	-	-	-	3.5	3.3	-	-	-	-	-
100g BAKING TEST												
Loaf volume, cm3	-	-	-	-	-	605	950	-	-	-	-	-
Evaluation	-	-	-	-	-	6	0	-	-	-	-	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION



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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 Bela-Bela (Warmbad) Crecy Immerpan Lehau Modimolle (Nylstroom) Mokopane (Potgietersrus) Naboomspruit Northam Nutfield Pienaarsrivier Polokwane (Pietersburg) Roedtan Settlers Tzaneen Vaalwater							
WHEAT	ave	min	max	stdev		ave	min	max	stdev				
Protein (12% mb), %	11.5	10.6	13.0	0.93		11.9	10.1	13.1	1.05				
Falling number, sec	436	401	474	23.05		415	371	469	33.54				
1000 Kernel mass (13% mb), g	41.2	36.3	45.2	30.4		41.7	36.8	46.5	3.99				
Hectolitre mass (dirty), kg/hl	82.3	80.9	83.3	0.70		80.6	77.7	82.5	1.95				
Screenings (<1.8mm), %	2.41	1.72	3.22	0.53		1.56	0.38	2.82	0.87				
Total damaged kernels, %	0.32	0.12	0.80	0.18		0.51	0.12	0.90	0.25				
Number of samples	11					8							
CULTIVARS													
cultivars		SST 835	34.4				Duzi	32.5					
with highest % occurrence		Duzi	28.6				SST 835	28.1					
		SST 876	12.6				SST 843	21.1					
		SST 843	6.7				Kariega	11.0					
		CRN 826	6.4				SST 876	7.3					
Number of samples	11					8							
MIXOGRAM (Quadromat)	ave	min	max	stdev		ave	min	max	stdev				
Peak time, min	2.2	1.8	2.3	0.16		2.9	2.4	4.3	0.60				
Tail height (6min), mm	46	41	51	2.73		50	46	59	3.92				
Number of samples	11					8							
BÜHLER EXTRACTION, %	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW	
	74.6	76.0	75.3	75.3	-	-	75.3	75.1	77.7	-	-	-	
FLOUR													
Protein (12% mb), %	12.2	10.1	9.8	9.5	-	-	11.8	10.2	9.2	-	-	-	
Colour, KJ	-1.8	-2.1	-2.5	-2.5	-	-	-2.3	-2.0	-2.4	-	-	-	
GLUTEN													
Wet gluten (14% mb), %	34.7	27.9	27.4	26.5	-	-	31.4	28.6	25.0	-	-	-	
Dry gluten (14% mb), %	11.8	9.2	8.9	8.9	-	-	10.8	9.9	8.5	-	-	-	
FARINOGRAM													
Water absorption (14% mb), %	65.8	63.4	61.5	63.0	-	-	64.1	62.8	61.4	-	-	-	
Development time, min	5.2	3.3	4.0	4.0	-	-	6.7	4.7	4.8	-	-	-	
Stability, min	6.5	5.0	4.6	4.7	-	-	8.1	5.5	5.9	-	-	-	
Mixing tolerance index, BU	29	43	48	47	-	-	35	44	48	-	-	-	
EXTENSOGRAM (45 min pull)													
Area, cm2	74	57	60	56	-	-	115	-	59	-	-	-	
Maximum height, BU	290	240	250	235	-	-	425	-	265	-	-	-	
Extensibility, mm	176	158	159	153	-	-	192	-	149	-	-	-	
ALVEOGRAM													
Strength (S), cm2	34.6	26.6	23.1	20.9	-	-	43.4	27.4	24.8	-	-	-	
Stability (P), mm	92	84	72	81	-	-	96	75	76	-	-	-	
Distensibility (L), mm	89	75	78	57	-	-	97	91	74	-	-	-	
Configuration ratio (P/L)	1.03	1.12	0.92	1.42	-	-	0.99	0.82	1.03	-	-	-	
MIXOGRAM													
Peak time, min	2.3	2.2	2.3	2.0	-	-	2.8	2.3	2.3	-	-	-	
100g BAKING TEST													
Loaf volume, cm3	880	815	800	780	-	-	965	915	820	-	-	-	
Evaluation	2	0	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 OTHER SUMMER RAINFALL WHEAT AND IRRIGATION KwaZulu-Natal Province

PRODUCTION REGION	(36)					
	KwaZulu-Natal					
Intake silos	Bergville Bloedrivier Dannhauser Dundee Mizpah New Amalfi Paulpietersburg Vryheid Winterton					
WHEAT						
	ave	min	max	stdev		
Protein (12% mb), %	12.7	11.1	13.9	0.93		
Falling number, sec	432	373	475	37.31		
1000 Kernel mass (13% mb), g	39.1	33.0	42.7	3.11		
Hectolitre mass (dirty), kg/hl	82.2	80.6	83.9	1.02		
Screenings (<1.8mm), %	0.64	0.49	0.81	0.11		
Total damaged kernels, %	0.16	0.00	0.76	0.25		
Number of samples	8					
CULTIVARS						
		SST 835	53.6			
cultivars		SST 843	42.0			
with highest %		SST 877	2.3			
occurrence		Kariega	2.1			
Number of samples	8					
MIXOGRAM (Quadromat)						
	ave	min	max	stdev		
Peak time, min	2.9	2.0	3.3	0.42		
Tail height (6min), mm	49	44	52	3.04		
Number of samples	8					
BÜHLER EXTRACTION, %						
	B1	B2	B3	B4	UT	COW
	76.4	76.4	-	-	-	-
FLOUR						
Protein (12% mb), %	12.0	10.7	-	-	-	-
Colour, KJ	-2.0	-1.9	-	-	-	-
GLUTEN						
Wet gluten (14% mb), %	33.3	30.0	-	-	-	-
Dry gluten (14% mb), %	11.2	10.4	-	-	-	-
FARINOGRAM						
Water absorption (14% mb), %	64.8	62.2	-	-	-	-
Development time, min	6.3	5.8	-	-	-	-
Stability, min	6.7	6.6	-	-	-	-
Mixing tolerance index, BU	37	41	-	-	-	-
EXTENSOGRAM (45 min pull)						
Area, cm2	102	95	-	-	-	-
Maximum height, BU	375	350	-	-	-	-
Extensibility, mm	191	182	-	-	-	-
ALVEOGRAM						
Strength (S), cm2	40.2	30.7	-	-	-	-
Stability (P), mm	97	86	-	-	-	-
Distensibility (L), mm	91	80	-	-	-	-
Configuration ratio (P/L)	1.07	1.08	-	-	-	-
MIXOGRAM						
Peak time, min	2.7	2.8	-	-	-	-
100g BAKING TEST						
Loaf volume, cm3	950	885	-	-	-	-
Evaluation	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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