

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

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

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

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

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

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FARINOGRAM

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

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

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FARINOGRAM

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EXTENSOGRAM

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ALVEOGRAM

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SOUTH AFRICAN IRRIGATION WHEAT Eastern Cape

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

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

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FARINOGRAM

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EXTENSOGRAM

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ALVEOGRAM

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

**MAINLY IRRIGATION WHEAT
North-West Province**

PRODUCTION REGION	(11) Vaalharts					(12) North-West Western Region						
Intake silos	Barkly-West Hartswater Jan Kemp Magogong Taung					Bloubank Buhmannsdrif Kameel Kraaipan Madibogo Mafikeng Mareetsane Piet Plessis Springbokpan Vergeleë Vryburg Vryhof						
WHEAT												
	ave	min	max	stdev		ave	min	max	stdev			
Protein (12% mb), %	12.5	10.7	13.9	0.81		13.1	11.1	15.2	1.70			
Falling number, sec	454	381	628	61.08		414	334	544	69.13			
1000 Kernel mass (13% mb), g	37.1	33.3	44.2	2.41		35.9	29.2	40.5	4.75			
Hectolitre mass (dirty), kg/hl	80.6	75.8	82.7	1.54		79.2	75.8	82.4	2.41			
Screenings (<1.8mm), %	2.90	0.67	10.58	2.02		2.27	0.78	4.32	1.43			
Total damaged kernels, %	0.52	0.06	2.20	0.44		0.64	0.18	2.86	0.99			
Number of samples	26					7						
CULTIVARS												
		CRN 826	38.2				SST 835	61.4				
cultivars		SST 835	30.8				CRN 826	13.6				
with highest %		Duzi	10.3				PAN 3349	11.4				
occurrence		SST 843	8.5				Duzi	6.3				
		Kariega	3.9				SST 806	2.4				
Number of samples	26					7						
MIXOGRAM (Quadromat)												
	ave	min	max	stdev		ave	min	max	stdev			
Peak time, min	2.8	2.0	4.3	0.51		2.6	1.8	3.7	0.68			
Tail height (6min), mm	49	46	58	2.85		49	43	55	4.50			
Number of samples	26					7						
BÜHLER EXTRACTION, %												
	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	76.2	76.7	76.1	-	75.4	-	76.6	77.0	-	-	73.6	-
FLOUR												
Protein (12% mb), %	11.8	10.7	9.5	-	10.6	-	11.6	10.6	-	-	13.9	-
Colour, KJ	-2.5	-2.4	-2.7	-	-2.3	-	-2.2	-2.3	-	-	-1.6	-
GLUTEN												
Wet gluten (14% mb), %	33.7	29.9	26.7	-	28.4	-	33.3	30.5	-	-	37.3	-
Dry gluten (14% mb), %	12.1	10.1	9.2	-	9.9	-	11.3	10.4	-	-	13.5	-
FARINOGRAM												
Water absorption (14% mb), %	60.3	58.9	59.7	-	59.2	-	62.0	61.4	-	-	62.4	-
Development time, min	4.0	4.2	4.5	-	5.2	-	4.7	3.5	-	-	6.2	-
Stability, min	6.4	6.3	6.6	-	8.9	-	5.6	3.9	-	-	17.4	-
Mixing tolerance index, BU	45	53	51	-	40	-	60	69	-	-	16	-
EXTENSOGRAM (45 min pull)												
Area, cm2	105	102	81	-	117	-	76	72	-	-	151	-
Maximum height, BU	360	370	340	-	450	-	290	270	-	-	470	-
Extensibility, mm	202	188	166	-	177	-	186	181	-	-	221	-
ALVEOGRAM												
Strength (S), cm2	37.2	33.9	33.9	-	41.4	-	32.9	27.2	-	-	56.0	-
Stability (P), mm	67	64	76	-	84	-	71	70	-	-	99	-
Distensibility (L), mm	132	131	100	-	105	-	106	97	-	-	110	-
Configuration ratio (P/L)	0.51	0.49	0.76	-	0.80	-	0.67	0.72	-	-	0.90	-
MIXOGRAM												
Peak time, min	2.3	2.3	2.5	-	2.9	-	2.3	1.8	-	-	3.0	-
100g BAKING TEST												
Loaf volume, cm3	925	895	810	-	875	-	940	885	-	-	995	-
Evaluation	0	0	0	-	0	-	0	0	-	-	2	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

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FARINOGRAM

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EXTENSOGRAM

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ALVEOGRAM

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

PRODUCTION REGION	(14) North-West Southern Region				(15) North-West South-Eastern Region							
	ave	min	max	stdev	ave	min	max	stdev				
Intake silos	Amalia Barberspan Delareyville Excelsior Geysdorp Hallat's Hope Migdol Nooitgedacht Schweizer-Reneke Taaibospan				Bloemhof Christiana Hertzogville Hoopstad Kingwood							
WHEAT												
Protein (12% mb), %	12.4	9.8	15.7	1.87	12.1	10.4	14.5	1.53				
Falling number, sec	369	289	516	78.97	400	241	706	163.18				
1000 Kernel mass (13% mb), g	35.9	29.7	39.6	3.53	38.4	34.7	42.5	3.25				
Hectolitre mass (dirty), kg/hl	78.6	74.0	82.5	2.83	81.2	77.5	83.3	2.25				
Screenings (<1.8mm), %	2.40	1.46	4.80	1.10	1.60	1.31	2.12	0.30				
Total damaged kernels, %	0.58	0.20	1.72	0.54	0.57	0.14	1.80	0.63				
Number of samples	7				6							
CULTIVARS												
		SST 835	35.1			SST 835	43.3					
cultivars		SST 843	23.0			SST 843	42.2					
with highest %		CRN 826	19.1			CRN 826	8.3					
occurrence		Olifants	5.6			Duzi	2.8					
		PAN 3434	5.4			PAN 3349	2.3					
Number of samples	7				6							
MIXOGRAM (Quadromat)												
Peak time, min	ave	min	max	stdev	ave	min	max	stdev				
	2.5	1.8	3.4	0.53	2.9	2.2	3.8	0.61				
Tail height (6min), mm	48	41	56	5.62	49	46	53	2.66				
Number of samples	7				6							
BÜHLER EXTRACTION, %	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	73.8	76.0	-	73.9	-	-	74.0	75.5	74.6	-	-	-
FLOUR												
Protein (12% mb), %	12.0	11.1	-	8.5	-	-	12.6	10.5	9.6	-	-	-
Colour, KJ	-2.4	-2.1	-	-2.4	-	-	-2.3	-2.1	-2.3	-	-	-
GLUTEN												
Wet gluten (14% mb), %	35.9	31.4	-	20.5	-	-	37.3	29.0	26.8	-	-	-
Dry gluten (14% mb), %	12.4	10.7	-	7.0	-	-	12.9	10.2	9.3	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	65.4	61.9	-	56.4	-	-	64.7	61.1	64.9	-	-	-
Development time, min	5.7	3.8	-	1.8	-	-	5.0	4.4	2.0	-	-	-
Stability, min	8.1	6.2	-	3.7	-	-	9.0	7.8	5.5	-	-	-
Mixing tolerance index, BU	37	49	-	80	-	-	30	45	43	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm2	78	67	-	56	-	-	87	103	80	-	-	-
Maximum height, BU	330	280	-	270	-	-	340	400	370	-	-	-
Extensibility, mm	173	166	-	144	-	-	182	176	157	-	-	-
ALVEOGRAM												
Strength (S), cm2	42.7	29.8	-	22.0	-	-	49.2	39.9	38.5	-	-	-
Stability (P), mm	119	75	-	54	-	-	107	98	127	-	-	-
Distensibility (L), mm	62	90	-	98	-	-	90	78	51	-	-	-
Configuration ratio (P/L)	1.91	0.84	-	0.55	-	-	1.19	1.26	2.50	-	-	-
MIXOGRAM												
Peak time, min	2.3	2.0	-	2.5	-	-	2.5	2.5	2.5	-	-	-
100g BAKING TEST												
Loaf volume, cm3	850	885	-	750	-	-	960	890	690	-	-	-
Evaluation	2	0	-	0	-	-	0	0	3	-	-	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

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FARINOGRAM

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EXTENSOGRAM

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ALVEOGRAM

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

PRODUCTION REGION	(16) North-West Central Eastern Region					(17) North-West Central Northern Region (Ottosdal)						
	ave	min	max	stdev		ave	min	max	stdev			
Intake silos	Bamboesspruit Klerksdorp Leeudoringstad Makwassie Regina Strydpoort Wolmaranstad					Bospoort Hartbeesfontein (Lethabong) Kleinharth Melliadora Ottosdal Rostrataville Vermaas Werda						
WHEAT												
Protein (12% mb), %	12.3	11.7	13.1	0.74		11.7	10.0	14.1	1.43			
Falling number, sec	418	396	439	21.50		361	283	419	47.17			
1000 Kernel mass (13% mb), g	33.7	32.3	35.7	1.78		38.6	33.6	42.0	2.80			
Hectolitre mass (dirty), kg/hl	76.4	73.8	79.1	2.65		79.3	77.2	81.7	1.98			
Screenings (<1.8mm), %	2.86	1.82	4.69	1.59		1.02	0.29	2.02	0.55			
Total damaged kernels, %	0.34	0.18	0.52	0.17		0.44	0.16	0.98	0.28			
Number of samples	3					8						
CULTIVARS												
		SST 835	59.3				SST 835	43.4				
cultivars		CRN 826	23.7				SST 88	11.6				
with highest %		SST 843	6.0				SST 027	7.5				
occurrence		Olifants	5.0				SST 806	7.3				
		SST 876	4.3				CRN 826	7.0				
Number of samples	3					8						
MIXOGRAM (Quadromat)												
	ave	min	max	stdev		ave	min	max	stdev			
Peak time, min	2.4	2.0	2.7	0.35		2.5	2.0	3.0	0.32			
Tail height (6min), mm	46	44	48	2.08		47	42	57	4.57			
Number of samples	3					8						
BÜHLER EXTRACTION, %												
	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	74.8	75.9	-	-	-	-	73.2	75.2	76.3	-	-	-
FLOUR												
Protein (12% mb), %	12.5	10.9	-	-	-	-	12.4	11.2	9.2	-	-	-
Colour, KJ	-2.3	-2.4	-	-	-	-	-2.2	-2.3	-2.5	-	-	-
GLUTEN												
Wet gluten (14% mb), %	34.5	31.5	-	-	-	-	34.1	30.8	25.2	-	-	-
Dry gluten (14% mb), %	11.9	10.3	-	-	-	-	12.4	10.1	8.6	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	61.0	61.5	-	-	-	-	62.1	62.2	59.5	-	-	-
Development time, min	4.8	3.7	-	-	-	-	4.7	4.0	3.3	-	-	-
Stability, min	7.3	3.8	-	-	-	-	5.9	5.9	4.3	-	-	-
Mixing tolerance index, BU	42	78	-	-	-	-	49	61	73	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm2	98	54	-	-	-	-	97	102	59	-	-	-
Maximum height, BU	330	230	-	-	-	-	335	330	270	-	-	-
Extensibility, mm	206	183	-	-	-	-	204	209	150	-	-	-
ALVEOGRAM												
Strength (S), cm2	39.6	28.0	-	-	-	-	40.2	35.9	27.7	-	-	-
Stability (P), mm	74	68	-	-	-	-	78	84	74	-	-	-
Distensibility (L), mm	125	103	-	-	-	-	125	91	88	-	-	-
Configuration ratio (P/L)	0.59	0.66	-	-	-	-	0.62	0.93	0.84	-	-	-
MIXOGRAM												
Peak time, min	2.1	2.0	-	-	-	-	2.2	2.2	2.2	-	-	-
100g BAKING TEST												
Loaf volume, cm3	1000	910	-	-	-	-	945	895	850	-	-	-
Evaluation	0	0	-	-	-	-	0	0	0	-	-	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

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FARINOGRAM

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EXTENSOGRAM

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ALVEOGRAM

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

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

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

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FARINOGRAM

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EXTENSOGRAM

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ALVEOGRAM

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

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

PRODUCTION REGION
(20)
North-West
Eastern Region

**Free State
North-Western Region (Viljoenskroon)**
(21)

Intake silos

Battery
Boons
Brits
Derby
Koster
Rustenburg
Swartruggens
Syferbult

Attie
Groenebloem
Heuningspruit
Koppies
Rooiwal
Vierfontein
Viljoenskroon
Vredefort
Weiveld

WHEAT	ave	min	max	stdev	ave	min	max	stdev				
Protein (12% mb), %	11.3	9.9	13.0	1.06	12.0	9.8	13.3	1.50				
Falling number, sec	393	342	509	52.70	384	349	446	39.01				
1000 Kernel mass (13% mb), g	38.5	32.0	42.8	3.60	39.7	35.4	49.4	5.58				
Hectolitre mass (dirty), kg/hl	79.4	76.2	82.0	2.01	81.4	80.2	82.2	0.86				
Screenings (<1.8mm), %	1.57	0.56	3.00	0.74	1.30	1.00	2.08	0.45				
Total damaged kernels, %	0.33	0.16	0.58	0.14	0.16	0.08	0.32	0.09				
Number of samples	10				5							
CULTIVARS												
	SST 835		34.5		PAN 3120		21.4					
cultivars	Kariega		17.3		PAN 3377		18.4					
with highest %	Duzi		16.1		SST 027		8.8					
occurrence	Baviaans		7.4		SST 88		8.4					
	CRN 826		6.5		SST 835		8.2					
Number of samples	10				5							
MIXOGRAM (Quadromat)	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	2.9	2.0	3.0	0.57	2.5	2.2	2.8	0.25				
Tail height (6min), mm	47	43	55	3.65	50	44	54	4.24				
Number of samples	10				5							
BÜHLER EXTRACTION, %	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	75.6	76.5	76.5	-	-	-	74.6	74.8	-	74.9	-	-
FLOUR												
Protein (12% mb), %	11.7	10.6	9.7	-	-	-	11.7	10.3	-	8.7	-	-
Colour, KJ	-1.6	-2.4	-2.3	-	-	-	-2.1	-2.3	-	-1.5	-	-
GLUTEN												
Wet gluten (14% mb), %	30.9	28.4	25.7	-	-	-	32.8	28.3	-	26.4	-	-
Dry gluten (14% mb), %	10.8	9.8	8.6	-	-	-	11.5	9.6	-	9.9	-	-
FARINOGRAM												
Water absorption (14% mb), %	60.9	60.0	58.0	-	-	-	62.4	65.1	-	60.6	-	-
Development time, min	4.7	4.0	3.8	-	-	-	5.0	4.0	-	2.2	-	-
Stability, min	7.7	6.2	6.4	-	-	-	7.3	7.9	-	4.2	-	-
Mixing tolerance index, BU	48	48	50	-	-	-	48	36	-	69	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	100	86	80	-	-	-	90	99	-	52	-	-
Maximum height, BU	355	320	350	-	-	-	360	390	-	260	-	-
Extensibility, mm	200	187	163	-	-	-	179	180	-	135	-	-
ALVEOGRAM												
Strength (S), cm ²	38.7	31.2	30.1	-	-	-	44.3	45.1	-	23.5	-	-
Stability (P), mm	78	69	64	-	-	-	96	120	-	85	-	-
Distensibility (L), mm	105	103	107	-	-	-	96	71	-	56	-	-
Configuration ratio (P/L)	0.74	0.68	0.59	-	-	-	1.01	1.70	-	1.52	-	-
MIXOGRAM												
Peak time, min	3.0	2.5	2.8	-	-	-	2.4	2.1	-	1.8	-	-
100g BAKING TEST												
Loaf volume, cm ³	900	915	860	-	-	-	920	760	-	695	-	-
Evaluation	0	0	0	-	-	-	0	2	-	1	-	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

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FARINOGRAM

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EXTENSOGRAM

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ALVEOGRAM

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SOUTH AFRICAN

SUMMER RAINFALL WHEAT (AND IRRIGATION)

Free State Province (Central)

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

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

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

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

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

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

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 (South-Western)

OTHER SUMMER RAINFALL AND IRRIGATION WHEAT

Mpumalanga

PRODUCTION REGION	(24) Free State Central Region				(32) Mpumalanga Western Region							
	Bloemfontein		Welgeleë Winburg		Argent		Dryden Endicott Elof Hawerklip Kendal Ogies					
Intake silos	Bloemfontein Brandfort De Brug Geneva Hennenman Koffiefontein Kroonstad Petrusburg Theunissen Van Tonder				Argent Dryden Endicott Elof Hawerklip Kendal Ogies							
WHEAT												
	ave	min	max	stdev	ave	min	max	stdev				
Protein (12% mb), %	11.8	9.2	13.5	1.16	11.5	10.2	12.8	0.98				
Falling number, sec	322	193	584	73.11	278	177	339	62.10				
1000 Kernel mass (13% mb), g	37.5	30.4	44.1	3.28	41.7	40.9	42.7	0.71				
Hectolitre mass (dirty), kg/hl	80.8	77.3	84.2	1.64	81.6	80.7	82.3	0.72				
Screenings (<1.8mm), %	1.47	0.34	2.79	0.71	0.63	0.50	0.81	0.13				
Total damaged kernels, %	0.61	0.00	3.28	0.67	1.95	1.18	3.48	0.91				
Number of samples	29				5							
CULTIVARS												
	PAN 3120		17.9		SST 835		62.8					
cultivars	SST 835		14.8		SST 806		23.8					
with highest %	Gariep		12.8		SST 876		7.4					
occurrence	PAN 3118		12.4		Duzi		5.0					
	Elands		7.4		Olifants		1.0					
Number of samples	29				5							
MIXOGRAM (Quadromat)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	3.0	1.9	3.8	0.44	2.9	2.7	3.2	0.20				
Tail height (6min), mm	52	42	61	4.77	47	44	49	1.92				
Number of samples	29				5							
	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
BÜHLER EXTRACTION, %	74.1	73.8	73.8	71.8	74.2	-	-	76.7	76.2	-	76.7	-
FLOUR												
Protein (12% mb), %	11.7	10.2	9.4	7.9	10.0	-	-	10.7	9.8	-	10.9	-
Colour, KJ	-1.9	-2.0	-2.3	-2.0	-2.3	-	-	-2.1	-2.2	-	-1.9	-
GLUTEN												
Wet gluten (14% mb), %	32.5	27.8	25.3	18.5	27.6	-	-	30.3	26.9	-	29.8	-
Dry gluten (14% mb), %	11.4	10.1	8.8	6.5	9.9	-	-	10.5	8.9	-	10.2	-
FARINOGRAM												
Water absorption (14% mb), %	61.4	60.4	60.5	55.7	60.7	-	-	61.5	60.4	-	60.6	-
Development time, min	4.3	2.8	2.5	1.7	3.7	-	-	3.8	3.7	-	3.0	-
Stability, min	7.9	6.9	5.6	3.2	5.6	-	-	6.0	5.7	-	6.0	-
Mixing tolerance index, BU	40	42	53	83	67	-	-	52	56	-	48	-
EXTENSOGRAM (45 min pull)												
Area, cm2	110	92	69	77	84	-	-	87	75	-	104	-
Maximum height, BU	410	385	340	380	350	-	-	325	315	-	360	-
Extensibility, mm	182	171	141	143	173	-	-	190	171	-	199	-
ALVEOGRAM												
Strength (S), cm2	43.7	38.8	33.2	22.6	38.5	-	-	37.8	30.7	-	35.6	-
Stability (P), mm	90	97	92	78	86	-	-	78	76	-	73	-
Distensibility (L), mm	98	77	72	48	90	-	-	108	86	-	110	-
Configuration ratio (P/L)	0.92	1.26	1.29	1.61	0.96	-	-	0.72	0.88	-	0.66	-
MIXOGRAM												
Peak time, min	2.5	2.8	2.7	3.3	3.0	-	-	2.5	2.6	-	2.7	-
100g BAKING TEST												
Loaf volume, cm3	935	845	800	670	795	-	-	910	810	-	870	-
Evaluation	0	0	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 AND IRRIGATION WHEAT
Mpumalanga**

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

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

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FARINOGRAM

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EXTENSOGRAM

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ALVEOGRAM

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

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

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

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FARINOGRAM

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EXTENSOGRAM

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ALVEOGRAM

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