

**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), %	11.9	10.7	13.1	1.20		12.3	11.2	13.3	0.63			
Falling number, sec	394	375	418	21.83		421	359	456	27.37			
1000 Kernel mass (13% mb), g	34.2	33.0	34.8	1.01		35.4	31.7	41.0	2.97			
Hectolitre mass (dirty), kg/hl	80.4	78.8	81.4	1.38		77.9	75.0	79.4	1.38			
Screenings (<1.8mm), %	4.41	4.09	4.88	0.41		2.64	0.68	6.00	1.48			
Total damaged kernels, %	0.64	0.42	1.02	0.33		0.41	0.28	0.64	0.10			
Number of samples	3					14						
CULTIVARS												
	SST 027 33.0					SST 88 49.0						
cultivars	SST 015 25.0					SST 027 30.4						
with highest %	SST 047 15.7					SST 015 17.6						
occurrence	SST 88 15.7					SST 047 3.1						
	SST 825 7.0											
Number of samples	3					14						
MIXOGRAM (Quadromat)												
	ave	min	max	stdev		ave	min	max	stdev			
Peak time, min	3.2	2.8	3.5	0.35		3.0	2.2	3.5	0.42			
Tail height (6min), mm	49	44	55	5.57		51	48	53	1.75			
Number of samples	3					14						
BÜHLER EXTRACTION, %												
	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	-	-	-	-	72.0	-	72.4	73.9	-	-	71.3	-
FLOUR												
Protein (12% mb), %	-	-	-	-	10.8	-	11.7	10.2	-	-	11.2	-
Colour, KJ	-	-	-	-	-2.6	-	-2.6	-2.9	-	-	-2.5	-
GLUTEN												
Wet gluten (14% mb), %	-	-	-	-	29.0	-	31.3	26.8	-	-	30.3	-
Dry gluten (14% mb), %	-	-	-	-	10.0	-	10.9	9.2	-	-	10.3	-
FARINOGRAM												
Water absorption (14% mb), %	-	-	-	-	61.3	-	61.4	59.9	-	-	61.1	-
Development time, min	-	-	-	-	3.4	-	4.3	4.7	-	-	5.3	-
Stability, min	-	-	-	-	9.4	-	11.1	9.1	-	-	10.6	-
Mixing tolerance index, BU	-	-	-	-	26	-	30	35	-	-	33	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	-	-	-	-	89	-	106	86	-	-	93	-
Maximum height, BU	-	-	-	-	376	-	386	334	-	-	366	-
Extensibility, mm	-	-	-	-	167	-	193	182	-	-	181	-
ALVEOGRAM												
Strength (S), cm ²	-	-	-	-	34.2	-	36.9	32.7	-	-	34.6	-
Stability (P), mm	-	-	-	-	85	-	83	77	-	-	86	-
Distensibility (L), mm	-	-	-	-	90	-	106	101	-	-	94	-
Configuration ratio (P/L)	-	-	-	-	0.94	-	0.78	0.76	-	-	0.91	-
MIXOGRAM												
Peak time, min	-	-	-	-	3.2	-	2.9	2.9	-	-	2.9	-
100g BAKING TEST												
Loaf volume, cm ³	-	-	-	-	790	-	845	820	-	-	830	-
Evaluation	-	-	-	-	2	-	2	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), %	11.7	9.5	13.0	0.96	11.4	9.5	13.0	0.97				
Falling number, sec	412	292	472	29.45	406	347	454	28.66				
1000 Kernel mass (13% mb), g	37.9	31.3	46.0	2.93	36.2	32.5	39.6	1.95				
Hectolitre mass (dirty), kg/hl	81.2	78.3	84.2	1.27	80.8	77.6	83.2	1.09				
Screenings (<1.8mm), %	1.56	0.20	2.92	0.81	0.74	0.08	5.00	1.22				
Total damaged kernels, %	0.52	0.08	2.86	0.45	0.59	0.18	1.62	0.37				
Number of samples	55				37							
CULTIVARS	SST 88 35.1				SST 027 30.8							
cultivars	SST 027 31.1				SST 015 29.8							
with highest %	SST 015 29.2				SST 88 26.4							
occurrence	SST 047 3.4				SST 047 7.2							
	Kariega, SST 056 0.4				SST 57 4.7							
Number of samples	55				37							
MIXOGRAM (Quadromat)	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	3.1	2.5	3.8	0.31	3.0	2.2	4.0	0.30				
Tail height (6min), mm	51	40	59	3.40	49	42	56	3.74				
Number of samples	55				37							
BÜHLER EXTRACTION, %	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	73.2	73.3	73.7	72.8	72.3	-	72.6	73.1	73.7	73.3	73.0	-
FLOUR												
Protein (12% mb), %	11.5	10.5	9.5	8.7	11.7	-	11.5	10.4	9.6	8.6	10.6	-
Colour, KJ	-2.9	-3.0	-2.9	-3.2	-3.0	-	-2.8	-3.2	-3.2	-3.3	-3.0	-
GLUTEN												
Wet gluten (14% mb), %	31.2	27.7	24.0	20.3	31.0	-	30.5	27.7	25.0	21.9	29.1	-
Dry gluten (14% mb), %	10.6	9.7	8.0	7.1	10.7	-	10.4	9.8	8.8	7.5	9.8	-
FARINOGRAM												
Water absorption (14% mb), %	62.4	61.5	61.8	60.0	60.9	-	61.5	60.8	59.3	58.4	60.9	-
Development time, min	5.2	3.2	2.8	1.7	4.5	-	4.5	4.2	3.2	2.0	4.5	-
Stability, min	10.3	8.3	7.0	5.8	9.1	-	10.1	8.0	7.7	6.1	7.5	-
Mixing tolerance index, BU	35	26	37	44	33	-	32	41	36	42	47	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	92	91	74	69	117	-	86	74	75	67	74	-
Maximum height, BU	343	350	328	320	399	-	336	313	304	310	302	-
Extensibility, mm	190	181	160	153	210	-	184	167	176	156	175	-
ALVEOGRAM												
Strength (S), cm ²	40.4	35.9	31.7	28.1	41.9	-	37.9	32.1	30.3	26.3	34.7	-
Stability (P), mm	91	92	93	89	79	-	80	82	75	70	78	-
Distensibility (L), mm	105	86	74	65	124	-	110	86	94	93	109	-
Configuration ratio (P/L)	0.87	1.07	1.26	1.37	0.64	-	0.73	0.95	0.80	0.75	0.72	-
MIXOGRAM												
Peak time, min	2.8	2.8	3.1	3.8	2.9	-	3.0	3.2	3.0	3.3	4.8	-
100g BAKING TEST												
Loaf volume, cm ³	825	815	745	765	820	-	900	810	775	775	810	-
Evaluation	2	1	1	0	3	-	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	(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), %	11.9	10.3	13.0	0.62		11.1	9.4	13.6	1.17			
Falling number, sec	420	386	488	26.12		413	350	476	29.21			
1000 Kernel mass (13% mb), g	39.8	33.3	43.3	1.96		42.5	35.7	48.5	3.64			
Hectolitre mass (dirty), kg/hl	82.0	76.7	83.5	1.66		81.1	79.3	82.6	0.96			
Screenings (<1.8mm), %	2.09	0.18	4.03	0.85		1.89	0.50	9.00	1.65			
Total damaged kernels, %	0.77	0.06	2.50	0.67		0.85	0.18	1.74	0.42			
Number of samples	25					23						
CULTIVARS												
		SST 027	39.4			SST 88	39.8					
cultivars		SST 88	28.7			SST 027	32.3					
with highest %		SST 015	24.4			SST 015	23.0					
occurrence		SST 047	6.8			SST 056	2.0					
		SST 825	0.5			SST 047	1.7					
Number of samples	25					23						
MIXOGRAM (Quadromat)												
	ave	min	max	stdev		ave	min	max	stdev			
Peak time, min	2.9	2.6	3.2	0.18		2.6	2.2	3.0	0.22			
Tail height (6min), mm	51	47	55	2.35		48	42	55	3.68			
Number of samples	25					23						
BÜHLER EXTRACTION, %	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	73.8	73.7	-	-	-	75.4	73.4	74.2	74.5	72.6	74.0	-
FLOUR												
Protein (12% mb), %	11.6	10.7	-	-	-	9.6	10.2	10.2	9.3	8.7	11.0	-
Colour, KJ	-2.9	-3.0	-	-	-	-3.0	-2.9	-3.0	-3.0	-3.0	-2.9	-
GLUTEN												
Wet gluten (14% mb), %	31.4	28.5	-	-	-	24.9	32.8	28.3	24.4	31.7	30.1	-
Dry gluten (14% mb), %	11.0	9.9	-	-	-	8.7	11.2	10.3	8.3	11.2	10.3	-
FARINOGRAM												
Water absorption (14% mb), %	61.7	61.9	-	-	-	59.5	62.8	63.4	62.1	61.1	62.5	-
Development time, min	5.3	4.8	-	-	-	4.0	6.0	3.0	2.4	2.0	4.7	-
Stability, min	9.3	8.9	-	-	-	7.2	10.1	6.5	6.1	5.6	8.8	-
Mixing tolerance index, BU	37	39	-	-	-	46	34	40	41	48	34	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	91	76	-	-	-	67	77	48	44	44	71	-
Maximum height, BU	338	315	-	-	-	269	293	220	211	226	285	-
Extensibility, mm	192	174	-	-	-	173	187	149	140	131	175	-
ALVEOGRAM												
Strength (S), cm ²	38.7	35.8	-	-	-	27.8	35.8	27.8	25.2	25.1	31.7	-
Stability (P), mm	81	88	-	-	-	75	83	93	91	89	88	-
Distensibility (L), mm	117	97	-	-	-	86	102	62	58	56	82	-
Configuration ratio (P/L)	0.69	0.91	-	-	-	0.87	0.81	1.50	1.57	1.59	1.07	-
MIXOGRAM												
Peak time, min	2.8	3.0	-	-	-	2.8	2.5	2.4	2.8	3.2	2.7	-
100g BAKING TEST												
Loaf volume, cm ³	915	835	-	-	-	720	875	800	710	670	785	-
Evaluation	0	0	-	-	-	2	0	0	2	2	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 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), %	11.1	9.1	12.4	1.35		11.6	9.4	13.7	0.94			
Falling number, sec	378	356	407	22.39		388	345	457	21.72			
1000 Kernel mass (13% mb), g	45.7	44.9	46.9	0.73		43.1	35.7	50.2	3.57			
Hectolitre mass (dirty), kg/hl	83.3	81.4	85.0	1.49		82.6	80.0	85.8	1.67			
Screenings (<1.8mm), %	0.29	0.20	0.35	0.06		1.14	0.07	3.72	0.92			
Total damaged kernels, %	0.51	0.12	1.18	0.43		0.33	0.06	1.06	0.22			
Number of samples	5					35						
CULTIVARS												
	SST 835 46.4					SST 835 35.0						
cultivars	SST 027 21.6					Duzi 26.3						
with highest % occurrence	SST 88 16.8					SST 843 20.1						
	SST 015 11.0					SST 822 8.0						
	SST 843 4.2					PAN 3434 2.8						
Number of samples	5					35						
MIXOGRAM (Quadromat)	ave	min	max	stdev		ave	min	max	stdev			
Peak time, min	3.1	2.5	4.3	0.72		2.7	2.0	3.3	0.34			
Tail height (6min), mm	50	45	55	3.58		49	41	56	3.16			
Number of samples	5					35						
BÜHLER EXTRACTION, %	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	75.6	-	-	-	-	-	74.7	74.7	76.1	75.0	-	-
FLOUR												
Protein (12% mb), %	11.3	-	-	-	-	-	11.4	10.4	9.8	9.4	-	-
Colour, KJ	-2.9	-	-	-	-	-	-3.1	-3.1	-3.3	-3.0	-	-
GLUTEN												
Wet gluten (14% mb), %	30.9	-	-	-	-	-	32.9	29.7	28.4	26.1	-	-
Dry gluten (14% mb), %	10.7	-	-	-	-	-	11.3	10.1	9.7	8.9	-	-
FARINOGRAM												
Water absorption (14% mb), %	62.9	-	-	-	-	-	64.5	63.7	62.2	60.7	-	-
Development time, min	3.0	-	-	-	-	-	4.5	4.4	4.0	4.2	-	-
Stability, min	9.9	-	-	-	-	-	7.7	6.9	6.2	6.4	-	-
Mixing tolerance index, BU	21	-	-	-	-	-	42	52	56	55	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	86	-	-	-	-	-	83	70	68	76	-	-
Maximum height, BU	390	-	-	-	-	-	312	288	268	309	-	-
Extensibility, mm	162	-	-	-	-	-	192	172	181	176	-	-
ALVEOGRAM												
Strength (S), cm ²	38.4	-	-	-	-	-	38.1	32.3	29.2	28.1	-	-
Stability (P), mm	113	-	-	-	-	-	91	91	81	76	-	-
Distensibility (L), mm	63	-	-	-	-	-	95	77	83	86	-	-
Configuration ratio (P/L)	1.79	-	-	-	-	-	0.96	1.18	0.98	0.88	-	-
MIXOGRAM												
Peak time, min	3.3	-	-	-	-	-	2.5	2.6	2.4	2.5	-	-
100g BAKING TEST												
Loaf volume, cm ³	825	-	-	-	-	-	875	820	850	825	-	-
Evaluation	2	-	-	-	-	-	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
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), %	11.4	9.6	12.4	0.88		12.6	10.9	14.7	1.31			
Falling number, sec	375	340	404	17.82		400	356	420	24.37			
1000 Kernel mass (13% mb), g	42.2	39.3	45.7	1.89		38.4	33.4	44.9	4.48			
Hectolitre mass (dirty), kg/hl	80.2	78.9	82.7	1.09		81.6	78.9	84.2	2.32			
Screenings (<1.8mm), %	1.43	0.08	2.22	0.78		1.09	0.95	1.36	0.15			
Total damaged kernels, %	0.74	0.22	1.98	0.54		0.37	0.00	0.90	0.36			
Number of samples	17					6						
CULTIVARS												
		SST 835	36.2				Duzi	38.3				
cultivars		Duzi	27.9				SST 843	19.5				
with highest %		SST 843	15.5				SST 835	18.2				
occurrence		SST 877	12.0				PAN 3120	10.0				
		Baviaans	7.2				SST 877	5.3				
Number of samples	17					6						
MIXOGRAM (Quadromat)												
	ave	min	max	stdev		ave	min	max	stdev			
Peak time, min	2.6	2.2	3.2	0.29		2.8	2.3	4.5	0.85			
Tail height (6min), mm	49	44	53	2.83		49	44	57	4.94			
Number of samples	17					6						
BÜHLER EXTRACTION, %												
	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	75.7	76.1	76.2	75.9	-	-	75.0	-	-	-	-	-
FLOUR												
Protein (12% mb), %	11.4	10.8	10.1	9.1	-	-	12.1	-	-	-	-	-
Colour, KJ	-3.0	-3.0	-3.1	-2.9	-	-	-2.9	-	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	32.7	30.6	28.6	25.7	-	-	33.9	-	-	-	-	-
Dry gluten (14% mb), %	11.3	10.7	10.4	8.6	-	-	11.4	-	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	62.5	62.0	61.2	59.1	-	-	63.0	-	-	-	-	-
Development time, min	5.5	4.2	3.7	2.3	-	-	4.7	-	-	-	-	-
Stability, min	8.1	7.1	5.9	5.4	-	-	8.6	-	-	-	-	-
Mixing tolerance index, BU	45	45	53	57	-	-	35	-	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	93	77	75	66	-	-	102	-	-	-	-	-
Maximum height, BU	327	281	282	258	-	-	334	-	-	-	-	-
Extensibility, mm	208	193	190	182	-	-	226	-	-	-	-	-
ALVEOGRAM												
Strength (S), cm ²	34.3	30.4	27.5	22.6	-	-	39.1	-	-	-	-	-
Stability (P), mm	75	77	72	57	-	-	78	-	-	-	-	-
Distensibility (L), mm	105	90	97	101	-	-	118	-	-	-	-	-
Configuration ratio (P/L)	0.71	0.86	0.74	0.56	-	-	0.66	-	-	-	-	-
MIXOGRAM												
Peak time, min	2.5	2.4	2.4	2.5	-	-	2.4	-	-	-	-	-
100g BAKING TEST												
Loaf volume, cm ³	950	875	895	820	-	-	970	-	-	-	-	-
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	(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), %	9.8	-	-	-	10.8	9.1	12.0	0.93				
Falling number, sec	508	-	-	-	399	365	425	22.35				
1000 Kernel mass (13% mb), g	41.7	-	-	-	39.8	36.6	46.2	2.94				
Hectolitre mass (dirty), kg/hl	81.3	-	-	-	81.0	79.1	82.4	1.24				
Screenings (<1.8mm), %	1.89	-	-	-	1.94	1.37	3.14	0.55				
Total damaged kernels, %	0.60	-	-	-	0.24	0.08	0.62	0.16				
Number of samples	1				10							
CULTIVARS												
cultivars	SST 88		46.0		SST 835		36.6					
with highest %	SST 015		32.0		Duzi		17.9					
occurrence	SST 027		22.0		SST 843		17.0					
					PAN 3120		12.2					
					Baviaans		8.4					
Number of samples	1				10							
MIXOGRAM (Quadromat)	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	3.3	-	-	-	2.6	2.4	2.9	0.18				
Tail height (6min), mm	45	-	-	-	48	45	51	1.95				
Number of samples	1				10							
BÜHLER EXTRACTION, %	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	-	-	-	74.7	-	-	74.4	75.1	74.8	73.4	-	-
FLOUR												
Protein (12% mb), %	-	-	-	9.0	-	-	11.4	11.1	9.8	8.7	-	-
Colour, KJ	-	-	-	-2.7	-	-	-2.8	-2.6	-3.1	-3.1	-	-
GLUTEN												
Wet gluten (14% mb), %	-	-	-	22.8	-	-	31.5	31.3	26.4	23.3	-	-
Dry gluten (14% mb), %	-	-	-	7.7	-	-	10.6	10.9	8.9	7.7	-	-
FARINOGRAM												
Water absorption (14% mb), %	-	-	-	60.2	-	-	61.8	62.1	60.3	60.0	-	-
Development time, min	-	-	-	1.9	-	-	4.5	4.2	4.2	1.7	-	-
Stability, min	-	-	-	6.3	-	-	8.2	6.5	6.8	4.6	-	-
Mixing tolerance index, BU	-	-	-	38	-	-	39	49	54	57	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	-	-	-	79	-	-	105	77	76	52	-	-
Maximum height, BU	-	-	-	356	-	-	351	267	300	243	-	-
Extensibility, mm	-	-	-	157	-	-	217	203	181	151	-	-
ALVEOGRAM												
Strength (S), cm ²	-	-	-	27.5	-	-	38.2	30.4	27.5	25.1	-	-
Stability (P), mm	-	-	-	89	-	-	76	70	74	71	-	-
Distensibility (L), mm	-	-	-	64	-	-	123	116	82	82	-	-
Configuration ratio (P/L)	-	-	-	1.39	-	-	0.62	0.60	0.90	0.87	-	-
MIXOGRAM												
Peak time, min	-	-	-	3.3	-	-	2.5	2.5	2.8	2.9	-	-
100g BAKING TEST												
Loaf volume, cm ³	-	-	-	755	-	-	885	935	870	720	-	-
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	(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 Lethabong (Hartbeesfontein) Kleinharts Melliodora Ottosdal Rostrataville Vermaas Werda						
WHEAT												
Protein (12% mb), %	11.1	10.7	11.4	0.36		12.2	10.5	14.3	1.58			
Falling number, sec	411	361	440	43.49		347	272	380	50.46			
1000 Kernel mass (13% mb), g	35.0	33.0	36.6	1.83		34.7	32.1	36.7	1.97			
Hectolitre mass (dirty), kg/hl	80.5	79.8	81.0	0.61		78.9	78.5	79.5	0.44			
Screenings (<1.8mm), %	3.36	3.06	3.80	0.39		2.65	2.16	3.50	0.60			
Total damaged kernels, %	0.13	0.08	0.16	0.05		0.40	0.24	0.58	0.17			
Number of samples	3					4						
CULTIVARS												
cultivars	PAN 3120 32.0					SST 835 43.8						
with highest % occurrence	SST 835 22.3					SST 843 15.3						
	Gariiep 11.0					Gariiep 9.5						
	PAN 3118 10.3					PAN 3120 9.3						
	Elands 8.7					SST 877 8.5						
Number of samples	3					4						
MIXOGRAM (Quadromat)												
Peak time, min	ave	min	max	stdev		ave	min	max	stdev			
Tail height (6min), mm	3.2	2.8	3.5	0.35		3.1	2.9	3.4	0.22			
Number of samples	3					4						
BÜHLER EXTRACTION, %	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	-	-	-	72.3	-	-	73.0	75.4	73.2	74.9	-	-
FLOUR												
Protein (12% mb), %	-	-	-	10.2	-	-	13.1	11.0	9.1	10.8	-	-
Colour, KJ	-	-	-	-2.9	-	-	-2.9	-2.7	-3.1	-2.8	-	-
GLUTEN												
Wet gluten (14% mb), %	-	-	-	27.1	-	-	36.2	30.4	24.3	29.1	-	-
Dry gluten (14% mb), %	-	-	-	9.5	-	-	12.5	10.5	8.1	9.5	-	-
FARINOGRAM												
Water absorption (14% mb), %	-	-	-	62.1	-	-	63.6	60.9	61.2	61.0	-	-
Development time, min	-	-	-	3.3	-	-	7.3	5.0	2.0	4.7	-	-
Stability, min	-	-	-	8.6	-	-	11.8	8.0	5.0	7.8	-	-
Mixing tolerance index, BU	-	-	-	28	-	-	28	47	59	42	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	-	-	-	85	-	-	129	101	63	101	-	-
Maximum height, BU	-	-	-	372	-	-	372	346	268	332	-	-
Extensibility, mm	-	-	-	167	-	-	250	210	168	219	-	-
ALVEOGRAM												
Strength (S), cm ²	-	-	-	34.1	-	-	50.3	33.8	26.3	37.8	-	-
Stability (P), mm	-	-	-	95	-	-	85	71	79	73	-	-
Distensibility (L), mm	-	-	-	72	-	-	140	122	71	129	-	-
Configuration ratio (P/L)	-	-	-	1.32	-	-	0.61	0.58	1.11	0.57	-	-
MIXOGRAM												
Peak time, min	-	-	-	3.7	-	-	2.5	2.5	2.8	2.8	-	-
100g BAKING TEST												
Loaf volume, cm ³	-	-	-	825	-	-	940	865	755	845	-	-
Evaluation	-	-	-	0	-	-	2	0	0	0	-	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

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FARINOGRAM

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EXTENSOGRAM

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ALVEOGRAM

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SOUTH AFRICAN MAINLY IRRIGATION WHEAT North-West Province

PRODUCTION REGION	(18) North-West Central Region (Ventersdorp)					(19) North-West Central Region (Lichtenburg)						
	Intake silos											
	Bodenstein Buckingham Coligny Enselspruit Makokskraal Potchefstroom Ventersdorp					Grootpan Halfpad Hibernia Lichtenburg Lottiehalte Lusthof						
WHEAT	ave	min	max	stdev		ave	min	max	stdev			
Protein (12% mb), %	12.2	10.9	13.1	0.92		12.4	10.1	14.2	1.55			
Falling number, sec	374	350	406	24.45		401	350	437	29.84			
1000 Kernel mass (13% mb), g	37.6	37.0	38.7	0.78		35.5	32.0	39.2	2.11			
Hectolitre mass (dirty), kg/hl	80.4	80.2	80.5	0.13		80.8	78.7	82.5	1.34			
Screenings (<1.8mm), %	1.39	1.21	1.60	0.20		1.75	1.25	2.75	0.54			
Total damaged kernels, %	1.69	0.86	3.22	1.05		0.38	0.18	0.94	0.27			
Number of samples	4					8						
CULTIVARS												
	SST 843 44.0					SST 843 66.3						
cultivars	SST 835 35.5					SST 835 29.9						
with highest %	Duzi 16.8					Krokodil 1.9						
occurrence	Krokodil 3.8					SST 876 1.4						
						Duzi 0.6						
Number of samples	4					8						
MIXOGRAM (Quadromat)	ave	min	max	stdev		ave	min	max	stdev			
Peak time, min	2.5	2.0	3.3	0.56		3.6	2.5	4.7	0.72			
Tail height (6min), mm	51	45	57	5.20		57	51	68	6.48			
Number of samples	4					8						
BÜHLER EXTRACTION, %	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	75.6	-	-	-	-	-	73.9	75.3	-	-	-	-
FLOUR												
Protein (12% mb), %	11.7	-	-	-	-	-	12.3	10.5	-	-	-	-
Colour, KJ	-3.0	-	-	-	-	-	-3.0	-3.2	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	32.1	-	-	-	-	-	32.5	27.4	-	-	-	-
Dry gluten (14% mb), %	10.8	-	-	-	-	-	11.3	9.6	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	61.4	-	-	-	-	-	62.0	60.6	-	-	-	-
Development time, min	5.8	-	-	-	-	-	9.3	6.0	-	-	-	-
Stability, min	8.1	-	-	-	-	-	16.1	10.3	-	-	-	-
Mixing tolerance index, BU	44	-	-	-	-	-	29	40	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	122	-	-	-	-	-	150	123	-	-	-	-
Maximum height, BU	361	-	-	-	-	-	455	418	-	-	-	-
Extensibility, mm	241	-	-	-	-	-	244	220	-	-	-	-
ALVEOGRAM												
Strength (S), cm ²	38.4	-	-	-	-	-	47.7	38.4	-	-	-	-
Stability (P), mm	70	-	-	-	-	-	91	79	-	-	-	-
Distensibility (L), mm	143	-	-	-	-	-	105	105	-	-	-	-
Configuration ratio (P/L)	0.49	-	-	-	-	-	0.87	0.75	-	-	-	-
MIXOGRAM												
Peak time, min	2.5	-	-	-	-	-	3.3	3.3	-	-	-	-
100g BAKING TEST												
Loaf volume, cm ³	955	-	-	-	-	-	935	905	-	-	-	-
Evaluation	0	-	-	-	-	-	0	0	-	-	-	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

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FARINOGRAM

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EXTENSOGRAM

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ALVEOGRAM

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

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

PRODUCTION REGION	(20)						(21)					
	North-West Eastern Region						Free State North-Western Region (Viljoenskroon)					
Intake silos	Battery Boons Brits Derby Koster Rustenburg Swartruggens Syferbult						Attie Groenebloem Heuningspruit Koppies Rooiwal Vierfontein Viljoenskroon Vredefort Weiveld					
WHEAT	ave	min	max	stdev	ave	min	max	stdev	ave	min	max	stdev
Protein (12% mb), %	11.8	10.4	12.8	0.89	12.4	12.0	13.0	0.53	12.4	12.0	13.0	0.53
Falling number, sec	406	377	443	23.84	372	350	404	28.54	372	350	404	28.54
1000 Kernel mass (13% mb), g	40.9	36.4	49.4	4.85	34.8	33.0	36.0	1.57	34.8	33.0	36.0	1.57
Hectolitre mass (dirty), kg/hl	80.9	79.7	83.9	1.41	81.1	80.2	81.7	0.81	81.1	80.2	81.7	0.81
Screenings (<1.8mm), %	1.54	0.89	2.53	0.62	2.30	1.00	3.13	1.14	2.30	1.00	3.13	1.14
Total damaged kernels, %	0.28	0.18	0.38	0.06	0.38	0.18	0.56	0.19	0.38	0.18	0.56	0.19
Number of samples	8						3					
CULTIVARS												
cultivars with highest % occurrence	Duzi			43.6			SST 843			56.7		
	SST 843			29.3			SST 835			24.0		
	SST 835			21.8			PAN 3120			6.0		
	PAN 3434			3.5			Matlabas			5.3		
	Olifants			1.1			Elands, SST 877			4.0		
Number of samples	8						3					
MIXOGRAM (Quadromat)	ave	min	max	stdev	ave	min	max	stdev	ave	min	max	stdev
Peak time, min	3.0	2.3	3.7	0.58	3.1	2.7	3.3	0.35	3.1	2.7	3.3	0.35
Tail height (6min), mm	51	46	58	3.93	53	50	55	2.52	53	50	55	2.52
Number of samples	8						3					
BÜHLER EXTRACTION, %	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	74.5	75.6	77.4	-	-	-	75.0	-	-	72.9	-	-
FLOUR												
Protein (12% mb), %	11.6	10.6	9.8	-	-	-	11.5	-	-	11.0	-	-
Colour, KJ	-3.0	-2.6	-3.0	-	-	-	-2.9	-	-	-2.2	-	-
GLUTEN												
Wet gluten (14% mb), %	30.0	27.7	28.5	-	-	-	31.2	-	-	28.9	-	-
Dry gluten (14% mb), %	10.7	9.9	9.5	-	-	-	11.4	-	-	10.0	-	-
FARINOGRAM												
Water absorption (14% mb), %	61.7	60.6	62.5	-	-	-	60.8	-	-	61.8	-	-
Development time, min	6.8	4.2	3.7	-	-	-	6.2	-	-	2.3	-	-
Stability, min	12.7	7.5	5.1	-	-	-	10.3	-	-	9.6	-	-
Mixing tolerance index, BU	27	54	65	-	-	-	41	-	-	12	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	129	89	52	-	-	-	126	-	-	101	-	-
Maximum height, BU	430	319	193	-	-	-	428	-	-	387	-	-
Extensibility, mm	221	199	186	-	-	-	219	-	-	183	-	-
ALVEOGRAM												
Strength (S), cm ²	41.1	30.9	27.4	-	-	-	40.7	-	-	42.0	-	-
Stability (P), mm	84	71	69	-	-	-	78	-	-	94	-	-
Distensibility (L), mm	109	99	107	-	-	-	120	-	-	95	-	-
Configuration ratio (P/L)	0.77	0.72	0.64	-	-	-	0.65	-	-	0.99	-	-
MIXOGRAM												
Peak time, min	3.0	2.9	2.3	-	-	-	2.8	-	-	3.2	-	-
100g BAKING TEST												
Loaf volume, cm ³	940	910	780	-	-	-	910	-	-	905	-	-
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

SUMMER RAINFALL WHEAT (AND IRRIGATION)

Free State Province (Central)

PRODUCTION REGION	(26) Free State South-Eastern Region (Senekal)						(27) Free State Northern Region					
	Intake silos											
	Arlington Kaallaagte Libertas Marquard Meets Monte Video Senekal Steynsrus						Gottenburg Heilbron Hoogte Mooigeleë Petrus Steyn Wolwehoek					
WHEAT	ave	min	max	stdev	ave	min	max	stdev	ave	min	max	stdev
Protein (12% mb), %	12.6	10.9	14.3	1.00	12.9	11.4	13.5	0.86				
Falling number, sec	362	292	430	30.81	365	322	396	29.69				
1000 Kernel mass (13% mb), g	32.3	25.5	38.3	3.32	33.8	31.2	35.6	1.64				
Hectolitre mass (dirty), kg/hl	79.0	75.8	83.3	1.99	80.6	78.3	82.3	1.76				
Screenings (<1.8mm), %	2.04	0.72	3.34	0.76	0.80	0.15	1.48	0.58				
Total damaged kernels, %	0.39	0.00	1.32	0.44	0.41	0.18	0.76	0.23				
Number of samples	16						5					
CULTIVARS	Elands 28.4						Elands 48.6					
cultivars	SST 356 24.6						PAN 3120 18.2					
with highest % occurrence	Matlabas 8.6						SST 835 10.0					
	SST 843 7.8						SST 356 9.0					
	SST 835 5.9						SST 347 7.0					
Number of samples	16						5					
MIXOGRAM (Quadromat)	ave	min	max	stdev	ave	min	max	stdev	ave	min	max	stdev
Peak time, min	3.4	2.8	4.5	0.43	3.4	3.0	3.7	0.26				
Tail height (6min), mm	54	47	59	3.85	56	49	59	4.45				
Number of samples	16						5					
BÜHLER EXTRACTION, %	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	72.8	72.4	-	76.4	-	-	73.7	73.6	-	-	-	-
FLOUR												
Protein (12% mb), %	12.2	11.1	-	10.1	-	-	12.4	10.4	-	-	-	-
Colour, KJ	-2.2	-1.0	-	-2.9	-	-	-2.0	-2.3	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	32.0	29.2	-	28.2	-	-	32.2	27.3	-	-	-	-
Dry gluten (14% mb), %	11.6	9.9	-	9.7	-	-	11.2	9.4	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	61.6	60.5	-	59.2	-	-	60.8	59.5	-	-	-	-
Development time, min	4.5	5.3	-	3.8	-	-	7.4	2.2	-	-	-	-
Stability, min	13.2	10.6	-	6.6	-	-	17.1	8.2	-	-	-	-
Mixing tolerance index, BU	18	33	-	50	-	-	22	31	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	131	84	-	78	-	-	126	103	-	-	-	-
Maximum height, BU	433	357	-	295	-	-	428	408	-	-	-	-
Extensibility, mm	221	166	-	189	-	-	218	185	-	-	-	-
ALVEOGRAM												
Strength (S), cm ²	44.3	34.6	-	31.0	-	-	45.0	35.5	-	-	-	-
Stability (P), mm	84	81	-	62	-	-	80	83	-	-	-	-
Distensibility (L), mm	111	95	-	133	-	-	123	88	-	-	-	-
Configuration ratio (P/L)	0.76	0.85	-	0.47	-	-	0.65	0.94	-	-	-	-
MIXOGRAM												
Peak time, min	3.5	3.2	-	2.7	-	-	3.3	3.8	-	-	-	-
100g BAKING TEST												
Loaf volume, cm ³	965	895	-	840	-	-	1030	785	-	-	-	-
Evaluation	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

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), %	11.4	10.4	12.3	0.95		10.7	8.2	13.3	1.30			
Falling number, sec	345	331	367	19.09		292	83	402	93.38			
1000 Kernel mass (13% mb), g	35.7	34.5	36.4	1.07		35.2	27.1	44.5	4.01			
Hectolitre mass (dirty), kg/hl	80.4	79.6	81.0	0.74		79.0	74.5	82.0	2.12			
Screenings (<1.8mm), %	1.03	0.72	1.43	0.36		1.92	0.34	7.05	1.45			
Total damaged kernels, %	2.23	1.30	3.78	1.35		0.67	0.00	5.26	1.19			
Number of samples	3					30						
CULTIVARS												
cultivars with highest % occurrence	SST 843 32.7					PAN 3120 21.3						
	SST 835 23.7					PAN 3118 18.0						
	PAN 3120 19.7					SST 835 17.3						
	PAN 3355 8.7					SST 843 11.2						
Number of samples	3					30						
MIXOGRAM (Quadromat)												
Peak time, min	ave	min	max	stdev		ave	min	max	stdev			
Tail height (6min), mm	3.2	3.2	3.3	0.06		3.2	2.2	5.0	0.69			
Number of samples	3					30						
BÜHLER EXTRACTION, %												
	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	74.1	73.9	-	-	-	-	76.5	73.4	73.0	73.4	71.8	71.2
FLOUR												
Protein (12% mb), %	11.3	10.2	-	-	-	-	11.8	10.5	9.3	9.0	10.1	9.9
Colour, KJ	-2.6	-2.9	-	-	-	-	-2.9	-3.0	-2.9	-3.1	-2.6	-2.9
GLUTEN												
Wet gluten (14% mb), %	31.3	26.9	-	-	-	-	33.9	28.6	25.6	23.7	27.2	26.2
Dry gluten (14% mb), %	10.7	9.3	-	-	-	-	11.6	9.7	8.4	8.1	9.0	9.3
FARINOGRAM												
Water absorption (14% mb), %	64.0	61.2	-	-	-	-	62.1	61.9	59.3	60.6	59.1	60.6
Development time, min	5.5	2.7	-	-	-	-	5.9	2.5	2.0	2.0	3.5	2.2
Stability, min	9.9	8.5	-	-	-	-	7.3	8.1	5.8	5.3	6.0	5.5
Mixing tolerance index, BU	32	27	-	-	-	-	49	26	45	56	56	53
EXTENSOGRAM (45 min pull)												
Area, cm ²	102	95	-	-	-	-	116	93	72	73	80	97
Maximum height, BU	344	374	-	-	-	-	344	363	303	309	306	361
Extensibility, mm	211	186	-	-	-	-	242	188	170	170	184	193
ALVEOGRAM												
Strength (S), cm ²	47.7	39.3	-	-	-	-	37.6	36.4	25.8	28.6	27.7	33.0
Stability (P), mm	103	88	-	-	-	-	70	89	69	84	63	80
Distensibility (L), mm	101	97	-	-	-	-	146	90	90	73	116	86
Configuration ratio (P/L)	1.02	0.91	-	-	-	-	0.48	0.99	0.77	1.15	0.54	0.93
MIXOGRAM												
Peak time, min	2.8	3.2	-	-	-	-	2.3	2.8	2.8	3.3	2.8	3.5
100g BAKING TEST												
Loaf volume, cm ³	850	820	-	-	-	-	980	890	850	800	895	835
Evaluation	1	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				Tweeling Villiers Vrede Warden Windfield							
	Bethlehem				Afrikaskop							
	Clocolan				Ascent							
	De Wetsdorp				Cornelia							
	Ficksburg				Daniëlsrus							
	Fouriesburg				Eeram							
	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), %	12.0	9.1	14.0	1.32	12.6	9.7	15.5	1.30				
Falling number, sec	339	189	461	59.15	343	247	431	46.64				
1000 Kernel mass (13% mb), g	34.3	25.0	42.5	4.12	36.9	30.7	43.1	2.68				
Hectolitre mass (dirty), kg/hl	78.7	75.2	81.6	1.84	80.6	76.5	83.4	1.96				
Screenings (<1.8mm), %	2.04	0.75	4.02	0.88	0.88	0.12	4.17	0.78				
Total damaged kernels, %	0.23	0.06	0.70	0.17	0.27	0.00	0.80	0.18				
Number of samples	27				37							
CULTIVARS												
	Matlabas		24.6		Elands		24.6					
cultivars	Elands		24.0		SST 356		23.1					
with highest %	SST 356		21.9		SST 835		20.3					
occurrence	Baviaans		6.0		SST 843		10.6					
	Gariep		5.9		Matlabas		9.9					
Number of samples	27				37							
MIXOGRAM (Quadromat)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	3.7	2.8	5.3	0.68	3.2	2.3	4.0	0.44				
Tail height (6min), mm	54	46	68	4.79	54	44	64	5.45				
Number of samples	27				37							
BÜHLER EXTRACTION, %												
	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	72.6	71.7	72.5	72.3	-	-	73.8	74.1	-	-	72.2	-
FLOUR												
Protein (12% mb), %	11.8	10.3	9.7	10.6	-	-	12.2	10.8	-	-	8.7	-
Colour, KJ	-2.4	-2.4	-2.6	-1.9	-	-	-2.4	-2.2	-	-	-1.6	-
GLUTEN												
Wet gluten (14% mb), %	30.8	27.1	23.4	28.3	-	-	32.7	29.2	-	-	23.6	-
Dry gluten (14% mb), %	10.8	9.6	8.4	9.6	-	-	11.3	10.2	-	-	7.9	-
FARINOGRAM												
Water absorption (14% mb), %	62.7	61.3	61.4	60.9	-	-	63.6	62.5	-	-	59.7	-
Development time, min	5.5	2.5	2.2	4.3	-	-	4.2	4.8	-	-	2.7	-
Stability, min	12.6	7.9	10.9	10.5	-	-	10.7	8.6	-	-	7.2	-
Mixing tolerance index, BU	28	31	24	30	-	-	28	34	-	-	34	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	121	94	102	80	-	-	107	78	-	-	49	-
Maximum height, BU	442	371	414	340	-	-	363	311	-	-	237	-
Extensibility, mm	202	184	180	169	-	-	209	177	-	-	140	-
ALVEOGRAM												
Strength (S), cm ²	48.5	39.0	39.4	35.9	-	-	45.7	35.2	-	-	23.7	-
Stability (P), mm	106	94	106	88	-	-	92	89	-	-	83	-
Distensibility (L), mm	92	85	73	91	-	-	111	87	-	-	59	-
Configuration ratio (P/L)	1.15	1.11	1.45	0.97	-	-	0.83	1.02	-	-	1.41	-
MIXOGRAM												
Peak time, min	3.7	3.6	4.0	3.3	-	-	3.1	2.8	-	-	2.9	-
100g BAKING TEST												
Loaf volume, cm ³	920	845	790	885	-	-	925	855	-	-	760	-
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 (South-Western)

OTHER SUMMER RAINFALL AND IRRIGATION WHEAT

Mpumalanga

PRODUCTION REGION	(24) Free State Central Region				(30) Mpumalanga Eastern Region							
	Intake silos	Bloemfontein Brandfort De Brug Geneva Hennenman Koffiefontein Kroonstad Petrusburg Theunissen Van Tonder	Welgeleë Winburg		Amersfoort Badplaas Carolina Davel Ermelo Estancia Lothair Maizefield Mkondo Morgenzon	Overvaal Panbult						
WHEAT												
	ave	min	max	stdev	ave	min	max	stdev				
Protein (12% mb), %	11.9	9.8	14.4	1.28	13.9	13.7	14.1	0.20				
Falling number, sec	381	326	443	31.26	432	415	452	14.14				
1000 Kernel mass (13% mb), g	35.6	25.4	46.1	6.06	43.0	41.5	44.7	1.22				
Hectolitre mass (dirty), kg/hl	81.2	76.2	84.2	2.65	82.4	81.9	82.8	0.33				
Screenings (<1.8mm), %	1.74	0.44	3.64	0.78	1.00	0.85	1.07	0.08				
Total damaged kernels, %	0.20	0.08	0.38	0.08	0.35	0.26	0.40	0.05				
Number of samples	15				6							
CULTIVARS												
		SST 835	27.3		SST 843	51.7						
cultivars		SST 843	14.3		Duzi	39.0						
with highest %		PAN 3120	11.8		SST 835	9.3						
occurrence		PAN 3118	11.5									
		CRN 826	9.6									
Number of samples	15				6							
MIXOGRAM (Quadromat)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	3.1	2.7	3.8	0.33	3.1	2.8	3.7	0.32				
Tail height (6min), mm	51	46	59	4.24	57	54	59	1.94				
Number of samples	15				6							
BÜHLER EXTRACTION, %												
	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	73.0	72.6	74.4	72.5	-	-	74.4	-	-	-	-	-
FLOUR												
Protein (12% mb), %	11.7	11.8	9.7	9.2	-	-	12.9	-	-	-	-	-
Colour, KJ	-2.5	-2.5	-3.0	-3.0	-	-	-3.2	-	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	31.7	32.3	26.8	23.9	-	-	33.9	-	-	-	-	-
Dry gluten (14% mb), %	11.0	11.3	8.8	8.2	-	-	12.3	-	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	61.7	62.7	61.4	59.9	-	-	64.7	-	-	-	-	-
Development time, min	5.5	5.7	4.5	2.0	-	-	7.7	-	-	-	-	-
Stability, min	11.5	12.7	7.4	6.9	-	-	15.6	-	-	-	-	-
Mixing tolerance index, BU	30	32	47	39	-	-	26	-	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	123	110	83	79	-	-	143	-	-	-	-	-
Maximum height, BU	437	396	342	368	-	-	438	-	-	-	-	-
Extensibility, mm	206	201	178	157	-	-	246	-	-	-	-	-
ALVEOGRAM												
Strength (S), cm ²	46.0	45.9	31.7	28.9	-	-	60.2	-	-	-	-	-
Stability (P), mm	88	95	87	85	-	-	100	-	-	-	-	-
Distensibility (L), mm	117	104	81	70	-	-	122	-	-	-	-	-
Configuration ratio (P/L)	0.75	0.91	1.07	1.21	-	-	0.82	-	-	-	-	-
MIXOGRAM												
Peak time, min	3.3	3.3	2.8	3.2	-	-	3.3	-	-	-	-	-
100g BAKING TEST												
Loaf volume, cm ³	915	915	855	780	-	-	860	-	-	-	-	-
Evaluation	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 OTHER SUMMER RAINFALL WHEAT AND IRRIGATION Mpumalanga

PRODUCTION REGION	(32) Mpumalanga Western Region					(33) Mpumalanga Northern Region						
Intake silos	Argent Dryden Endicott Elof Hawerklip Kendal Ogies					Driefontein Lydenburg Marble Hall Middelburg Stoffberg Pan Arnot Wonderfontein						
WHEAT	ave	min	max	stdev		ave	min	max	stdev			
Protein (12% mb), %	12.1	11.3	12.8	0.75		11.4	10.6	12.6	0.77			
Falling number, sec	415	361	472	55.54		468	408	529	48.95			
1000 Kernel mass (13% mb), g	35.1	32.2	37.7	2.76		39.1	34.6	41.7	2.40			
Hectolitre mass (dirty), kg/hl	82.1	81.4	82.7	0.67		80.7	76.0	82.8	2.80			
Screenings (<1.8mm), %	2.14	1.57	2.82	0.63		1.90	1.24	3.07	0.71			
Total damaged kernels, %	0.25	0.18	0.30	0.06		0.66	0.48	0.78	0.12			
Number of samples	3					6						
CULTIVARS												
	SST 843		36.3			SST 843, Duzi		37.2				
cultivars	SST 835		35.7			SST 835		16.7				
with highest %	SST 877		16.0			SST 876		9.0				
occurrence	PAN 3355		12.0									
Number of samples	3					6						
MIXOGRAM (Quadromat)	ave	min	max	stdev		ave	min	max	stdev			
Peak time, min	3.1	2.8	3.8	0.58		3.2	2.8	4.0	0.46			
Tail height (6min), mm	51	49	53	2.08		50	45	57	4.26			
Number of samples	3					6						
BÜHLER EXTRACTION, %	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	75.4	73.0	-	-	-	-	76.2	76.2	76.6	75.0	-	-
FLOUR												
Protein (12% mb), %	11.6	9.6	-	-	-	-	11.5	10.2	9.9	10.5	-	-
Colour, KJ	-2.8	-2.1	-	-	-	-	-2.4	-2.3	-2.5	-1.8	-	-
GLUTEN												
Wet gluten (14% mb), %	31.6	23.9	-	-	-	-	30.3	27.8	27.2	29.0	-	-
Dry gluten (14% mb), %	11.1	8.5	-	-	-	-	10.8	9.4	9.2	9.4	-	-
FARINOGRAM												
Water absorption (14% mb), %	61.8	60.0	-	-	-	-	60.7	61.0	59.6	58.8	-	-
Development time, min	4.9	1.8	-	-	-	-	6.7	2.3	2.2	4.0	-	-
Stability, min	7.6	5.0	-	-	-	-	13.1	8.3	6.4	6.5	-	-
Mixing tolerance index, BU	44	55	-	-	-	-	26	29	39	52	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	107	93	-	-	-	-	122	94	72	64	-	-
Maximum height, BU	370	412	-	-	-	-	449	360	283	244	-	-
Extensibility, mm	211	164	-	-	-	-	202	187	179	184	-	-
ALVEOGRAM												
Strength (S), cm ²	39.3	33.3	-	-	-	-	41.3	37.0	25.5	26.5	-	-
Stability (P), mm	76	97	-	-	-	-	82	89	66	59	-	-
Distensibility (L), mm	126	64	-	-	-	-	110	91	100	124	-	-
Configuration ratio (P/L)	0.60	1.52	-	-	-	-	0.75	0.98	0.66	0.48	-	-
MIXOGRAM												
Peak time, min	2.5	3.8	-	-	-	-	3.3	3.3	2.8	2.8	-	-
100g BAKING TEST												
Loaf volume, cm ³	990	700	-	-	-	-	895	785	840	815	-	-
Evaluation	0	3	-	-	-	-	0	1	0	1	-	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

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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), %	11.7	10.2	12.6	0.95		11.6	10.4	13.9	1.07			
Falling number, sec	407	384	424	18.62		456	321	536	65.73			
1000 Kernel mass (13% mb), g	38.4	34.6	40.8	2.50		39.4	36.9	44.9	2.61			
Hectolitre mass (dirty), kg/hl	83.8	82.7	84.5	0.84		81.0	77.9	82.9	1.35			
Screenings (<1.8mm), %	0.73	0.04	1.58	0.68		1.33	0.33	2.58	0.78			
Total damaged kernels, %	0.30	0.18	0.48	0.14		0.76	0.00	1.96	0.69			
Number of samples	5					12						
CULTIVARS												
		SST 843	55.2				SST 843	37.3				
cultivars		SST 835	31.2				Duzi	32.0				
with highest %		SST 877	10.6				SST 835	18.8				
occurrence		Duzi	3.0				Buffels	4.0				
							Kariega	3.5				
Number of samples	5					12						
MIXOGRAM (Quadromat)												
	ave	min	max	stdev		ave	min	max	stdev			
Peak time, min	3.1	2.8	3.3	0.26		3.1	2.1	4.3	0.72			
Tail height (6min), mm	52	48	57	3.39		51	44	61	5.60			
Number of samples	5					12						
BÜHLER EXTRACTION, %	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	75.3	73.7	74.6	-	75.7	-	75.1	75.7	76.5	-	-	-
FLOUR												
Protein (12% mb), %	11.6	10.3	9.3	-	11.1	-	11.8	10.3	9.6	-	-	-
Colour, KJ	-2.8	-3.0	-3.3	-	-3.2	-	-2.6	-2.8	-2.6	-	-	-
GLUTEN												
Wet gluten (14% mb), %	31.9	27.4	24.5	-	28.0	-	31.0	27.7	27.0	-	-	-
Dry gluten (14% mb), %	11.1	9.1	8.1	-	9.9	-	10.9	9.3	9.0	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	62.7	60.2	59.7	-	60.1	-	61.9	60.9	60.5	-	-	-
Development time, min	4.7	3.2	4.8	-	6.2	-	5.7	3.7	3.0	-	-	-
Stability, min	7.5	7.4	7.7	-	12.3	-	13.1	7.3	5.5	-	-	-
Mixing tolerance index, BU	46	39	46	-	32	-	27	44	52	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	101	102	94	-	117	-	130	77	62	-	-	-
Maximum height, BU	323	368	370	-	518	-	456	308	256	-	-	-
Extensibility, mm	227	197	183	-	170	-	213	174	170	-	-	-
ALVEOGRAM												
Strength (S), cm ²	37.8	34.9	36.7	-	40.8	-	43.9	32.9	26.9	-	-	-
Stability (P), mm	78	75	85	-	90	-	92	78	73	-	-	-
Distensibility (L), mm	119	112	98	-	93	-	99	99	92	-	-	-
Configuration ratio (P/L)	0.66	0.67	0.87	-	0.97	-	0.93	0.79	0.79	-	-	-
MIXOGRAM												
Peak time, min	2.6	2.8	3.3	-	3.8	-	3.2	3.0	2.5	-	-	-
100g BAKING TEST												
Loaf volume, cm ³	975	860	850	-	880	-	900	860	795	-	-	-
Evaluation	0	0	0	-	0	-	0	0	0	-	-	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

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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

(36)	
PRODUCTION REGION	KwaZulu-Natal
Intake silos	Bergville Bloedrivier Dannhauser Dundee Mizpah New Amalfi Paulpietersburg Vryheid Winterton
WHEAT	
	ave min max stdev
Protein (12% mb), %	12.0 10.4 13.1 0.94
Falling number, sec	473 367 573 70.55
1000 Kernel mass (13% mb), g	38.0 35.3 44.3 3.15
Hectolitre mass (dirty), kg/hl	82.4 80.1 83.2 1.04
Screenings (<1.8mm), %	1.49 0.77 2.52 0.74
Total damaged kernels, %	0.20 0.06 0.32 0.10
Number of samples	7
CULTIVARS	
	SST 835 52.1
cultivars	SST 843 23.1
with highest %	SST 806 12.6
occurrence	SST 877 12.1
Number of samples	7
MIXOGRAM (Quadromat)	
	ave min max stdev
Peak time, min	2.9 2.4 3.6 0.51
Tail height (6min), mm	49 46 51 1.99
Number of samples	7
BÜHLER EXTRACTION, %	
	B1 B2 B3 B4 UT COW
	76.3 76.4 - - - -
FLOUR	
Protein (12% mb), %	11.7 10.7 - - - -
Colour, KJ	-2.5 -2.9 - - - -
GLUTEN	
Wet gluten (14% mb), %	32.6 30.1 - - - -
Dry gluten (14% mb), %	10.7 10.2 - - - -
FARINOGRAM	
Water absorption (14% mb), %	62.4 60.7 - - - -
Development time, min	5.0 3.8 - - - -
Stability, min	8.7 7.6 - - - -
Mixing tolerance index, BU	44 40 - - - -
EXTENSOGRAM (45 min pull)	
Area, cm ²	82 72 - - - -
Maximum height, BU	324 272 - - - -
Extensibility, mm	178 182 - - - -
ALVEOGRAM	
Strength (S), cm ²	35.2 31.0 - - - -
Stability (P), mm	80 70 - - - -
Distensibility (L), mm	108 115 - - - -
Configuration ratio (P/L)	0.74 0.61 - - - -
MIXOGRAM	
Peak time, min	2.7 2.7 - - - -
100g BAKING TEST	
Loaf volume, cm ³	910 880 - - - -
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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