

South African quality data per production region

WINTER RAINFALL WHEAT

PRODUCTION REGION	(1) Namakwaland Region				(2) Swartland Western Region						
	WHEAT										
	ave	min	max	stdev	ave	min	max	stdev			
Protein (12% mb), %	11.7	10.1	13.6	1.46	10.9	9.4	12.7	0.98			
Falling number, sec	369	317	407	37.93	404	329	488	42.09			
Moisture, %	10.7	10.5	11.0	0.22	11.5	10.8	11.9	0.34			
1000 Kernel mass (13% mb), g	37.7	36.0	39.6	1.47	38.8	33.7	43.8	2.90			
Hectolitre mass (dirty), kg/hl	80.4	79.3	81.6	1.14	79.0	74.8	82.3	2.15			
Screenings (<1.8 mm sieve), %	3.62	3.34	4.20	0.39	2.36	0.58	4.89	1.40			
Total damaged kernels, %	1.72	1.36	1.92	0.25	0.34	0.00	0.70	0.26			
Combined deviations, %	5.87	5.18	6.76	0.66	3.52	0.84	6.99	2.05			
Number of samples	4				12						
MIXOGRAM (Quadromat Junior)											
	ave	min	max	stdev	ave	min	max	stdev			
Peak time, min	3.0	2.8	3.3	0.24	2.8	2.0	3.6	0.42			
Tail height (6 min), mm	45	43	47	2.31	47	42	51	2.91			
Number of samples	4				12						
COMPOSITE SAMPLES											
CLASS AND GRADE	Super	Grade 1	Grade 2	Grade 3	COW	Super	Grade 1	Grade 2	Grade 3	COW	
Bühler Extraction, %	-	-	-	-	70.9	-	73.4	71.6	71.7	-	
FLOUR											
Protein (12% mb), %	-	-	-	-	10.78	-	10.77	9.99	8.93	-	
Moisture, %	-	-	-	-	13.9	-	13.7	13.4	13.3	-	
Ash (db), %	-	-	-	-	0.62	-	0.74	0.60	0.62	-	
Colour, KJ (wet)	-	-	-	-	-4.9	-	-3.8	-4.7	-4.9	-	
Colour, Konica Minolta CM5 (dry)											
L*	-	-	-	-	94.17	-	93.56	94.12	94.22	-	
a*	-	-	-	-	0.47	-	0.78	0.56	0.44	-	
b*	-	-	-	-	9.64	-	8.99	9.11	9.02	-	
RVA											
Peak Viscosity, cP	-	-	-	-	2203	-	2622	2491	2495	-	
Minimum viscosity (Trough), cP	-	-	-	-	1664	-	1813	1758	1830	-	
Final Viscosity, cP	-	-	-	-	2485	-	3071	2921	2915	-	
Peak Time, min	-	-	-	-	7.00	-	7.00	7.00	7.00	-	
GLUTEN											
Wet gluten (14% mb), %	-	-	-	-	29.5	-	29.7	28.3	25.6	-	
Dry gluten (14% mb), %	-	-	-	-	9.7	-	10.0	9.1	8.0	-	
Gluten Index	-	-	-	-	96	-	94	97	98	-	
FARINOGRAM											
Water absorption (14% mb), %	-	-	-	-	59.5	-	57.8	60.3	60.0	-	
Development time, min	-	-	-	-	4.3	-	4.3	4.1	2.3	-	
Stability, min	-	-	-	-	9.1	-	9	9.4	9.1	-	
Mixing tolerance index, BU	-	-	-	-	41	-	39	35	26	-	
EXTENSOGRAM (45 min pull)											
Area, cm ²	-	-	-	-	93	-	92	81	110	-	
Maximum height, BU	-	-	-	-	365	-	371	350	413	-	
Extensibility, mm	-	-	-	-	186	-	180	164	198	-	
ALVEOGRAM											
Strength (S), cm ²	-	-	-	-	35.9	-	32.9	34.7	29.7	-	
Stability (P), mm	-	-	-	-	75	-	64	87	91	-	
Distensibility (L), mm	-	-	-	-	122	-	137	96	76	-	
Configuration ratio (P/L)	-	-	-	-	0.61	-	0.47	0.91	1.20	-	
MIXOGRAM											
Peak time, min	-	-	-	-	2.9	-	2.7	2.8	3.3	-	
100 g BAKING TEST											
Loaf volume, cm ³	-	-	-	-	951	-	992	890	826	-	
Evaluation (see page 72)	-	-	-	-	0	-	0	0	0	-	

South African quality data per production region

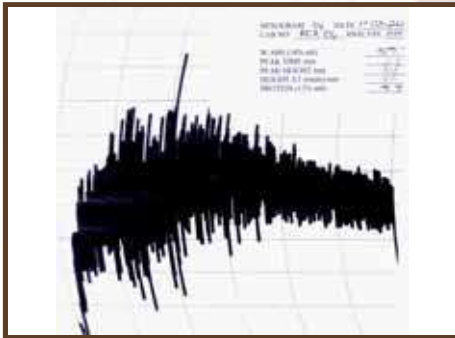
WINTER RAINFALL WHEAT

PRODUCTION REGION	(3) Swartland Central Region				(4) Swartland Eastern Region					
	WHEAT									
	ave	min	max	stdev	ave	min	max	stdev		
Protein (12% mb), %	11.0	8.9	13.2	0.90	11.0	9.7	12.3	0.86		
Falling number, sec	387	333	473	34.61	392	325	472	32.19		
Moisture, %	10.9	10.2	12.0	0.38	10.5	10.0	10.9	0.30		
1000 Kernel mass (13% mb), g	41.4	37.2	47.3	2.06	40.5	36.2	44.0	2.09		
Hectolitre mass (dirty), kg/hl	80.9	77.2	84.0	1.56	81.3	76.1	83.9	1.82		
Screenings (<1.8 mm sieve), %	1.34	0.04	5.25	0.79	1.26	0.06	2.76	0.84		
Total damaged kernels, %	0.44	0.00	1.44	0.31	0.67	0.00	1.60	0.48		
Combined deviations, %	2.72	0.12	6.35	1.17	2.68	0.20	4.61	1.21		
Number of samples	66				19					
MIXOGRAM (Quadromat Junior)										
	ave	min	max	stdev	ave	min	max	stdev		
Peak time, min	2.8	2.4	3.5	0.25	2.7	2.3	3.8	0.36		
Tail height (6 min), mm	46	39	56	3.17	45	39	53	3.81		
Number of samples	66				19					
COMPOSITE SAMPLES										
CLASS AND GRADE	Super	Grade 1	Grade 2	Grade 3	COW	Super	Grade 1	Grade 2	Grade 3	COW
Bühler Extraction, %	71.7	71.8	71.6	71.3	71.6	-	72.1	72.5	72.1	-
FLOUR										
Protein (12% mb), %	11.87	10.75	10.06	9.01	10.09	-	11.08	9.82	8.97	-
Moisture, %	13.5	13.8	13.4	13.2	13.5	-	14.0	13.6	13.5	-
Ash (db), %	0.61	0.58	0.55	0.57	0.60	-	0.57	0.56	0.57	-
Colour, KJ (wet)	-4.8	-4.9	-5.0	-5.0	-5.0	-	-5.0	-5.0	-5.0	-
Colour, Konica Minolta CM5 (dry)										
L*	93.87	93.99	93.84	93.91	94.04	-	93.81	94.05	94.13	-
a*	0.63	0.53	0.54	0.49	0.52	-	0.54	0.49	0.49	-
b*	9.23	8.99	9.27	9.27	9.35	-	9.83	9.61	9.43	-
RVA										
Peak Viscosity, cP	2505	2267	2387	2491	2343	-	2288	2276	2350	-
Minimum viscosity (Trough), cP	1727	1711	1734	1817	1808	-	1668	1683	1813	-
Final Viscosity, cP	2887	2558	2775	2955	2610	-	2618	2686	2757	-
Peak Time, min	7.00	7.00	7.00	7.00	7.00	-	7.00	7.00	7.00	-
GLUTEN										
Wet gluten (14% mb), %	32.5	31.1	28.0	24.7	27.1	-	31.1	27.0	24.1	-
Dry gluten (14% mb), %	10.9	10.1	9.1	8.0	9.2	-	10.3	8.8	7.9	-
Gluten Index	93	92	93	93	96	-	92	92	96	-
FARINOGRAM										
Water absorption (14% mb), %	62.1	60.4	60.7	59.0	60.0	-	59.3	59.3	59.5	-
Development time, min	5.1	4.5	3.4	3.4	2.2	-	4.3	4.1	2.5	-
Stability, min	20.0	9.1	8.1	7.1	7.0	-	9.3	6.5	5.6	-
Mixing tolerance index, BU	20	42	41	49	46	-	37	51	53	-
EXTENSOGRAM (45 min pull)										
Area, cm ²	115	101	86	70	89	-	100	77	65	-
Maximum height, BU	402	410	347	310	361	-	371	308	274	-
Extensibility, mm	212	178	177	161	177	-	196	177	166	-
ALVEOGRAM										
Strength (S), cm ²	43.6	37.9	35.3	28.9	35.0	-	35.5	30.0	27.8	-
Stability (P), mm	86	85	85	84	80	-	70	71	77	-
Distensibility (L), mm	133	111	107	81	111	-	136	114	93	-
Configuration ratio (P/L)	0.65	0.77	0.79	1.04	0.72	-	0.51	0.62	0.83	-
MIXOGRAM										
Peak time, min	2.4	2.8	2.8	2.7	2.8	-	2.4	2.6	2.7	-
100 g BAKING TEST										
Loaf volume, cm ³	1119	1004	996	936	984	-	1048	959	842	-
Evaluation (see page 72)	0	0	0	0	0	-	0	0	0	-

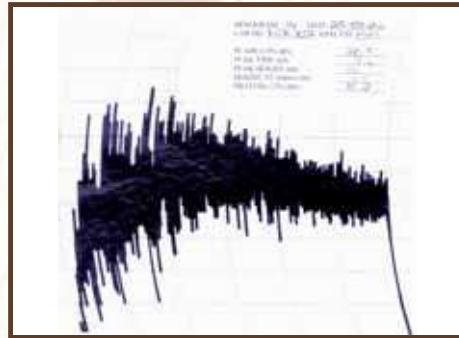
Rheological Graphs Per Production Region

MIXOGRAM

3

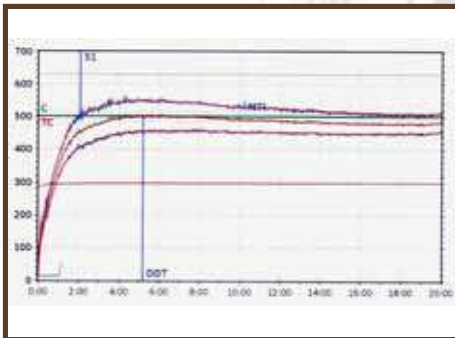


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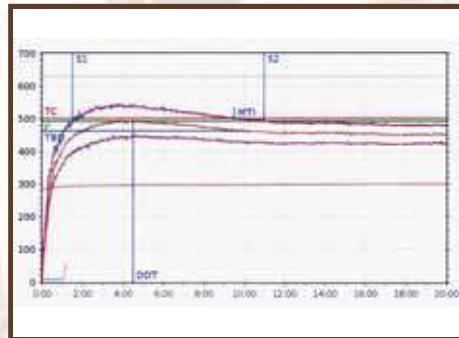


FARINOGRAM

3

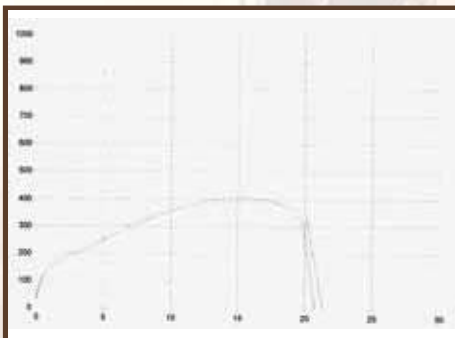


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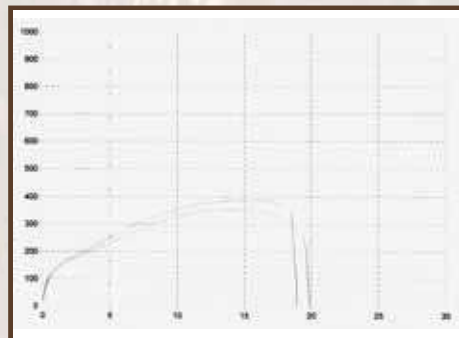


EXTENSOGRAM

3

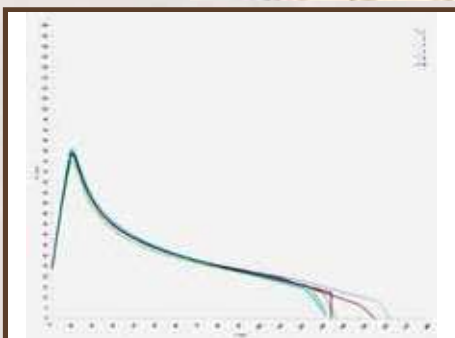


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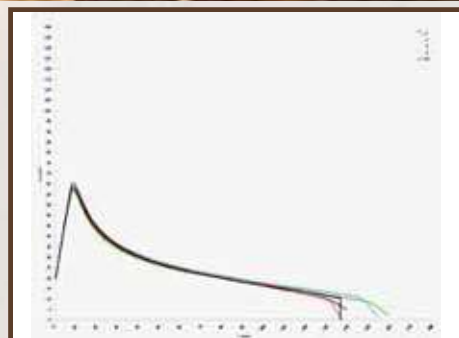


ALVEOGRAM

3



4



South African quality data per production region

WINTER RAINFALL WHEAT

PRODUCTION REGION	(5) Rüens Western Region				(6) Rüens Eastern Region					
	WHEAT									
	ave	min	max	stdev	ave	min	max	stdev		
Protein (12% mb), %	11.4	9.8	13.1	0.89	11.6	10.0	12.6	0.60		
Falling number, sec	378	307	433	34.94	339	278	390	31.33		
Moisture, %	11.6	11.0	12.1	0.27	11.7	11.2	12.4	0.38		
1000 Kernel mass (13% mb), g	41.3	37.7	44.0	1.59	42.3	36.9	44.5	1.84		
Hectolitre mass (dirty), kg/hl	79.3	76.6	81.6	1.40	79.0	77.3	81.6	1.14		
Screenings (<1.8 mm sieve), %	1.21	0.13	2.77	0.59	1.26	0.22	2.49	0.72		
Total damaged kernels, %	0.46	0.00	1.28	0.37	0.03	0.00	0.36	0.09		
Combined deviations, %	2.28	0.19	7.85	1.39	0.58	0.06	1.48	0.43		
Number of samples	27				26					
MIXOGRAM (Quadromat Junior)										
	ave	min	max	stdev	ave	min	max	stdev		
Peak time, min	3.1	2.7	3.7	0.26	3.4	2.8	4.2	0.38		
Tail height (6 min), mm	48	44	53	1.96	49	44	54	2.55		
Number of samples	27				26					
COMPOSITE SAMPLES										
CLASS AND GRADE	Super	Grade 1	Grade 2	Grade 3	COW	Super	Grade 1	Grade 2	Grade 3	COW
Bühler Extraction, %	73.3	72.4	72.8	72.9	-	-	71.9	72.3	71.7	71.2
FLOUR										
Protein (12% mb), %	12.19	10.96	10.08	9.18	-	-	10.67	10.02	8.89	10.44
Moisture, %	13.3	13.8	13.6	13.6	-	-	13.5	13.4	13.3	13.5
Ash (db), %	0.65	0.63	0.62	0.58	-	-	0.59	0.60	0.65	0.62
Colour, KJ (wet)	-4.3	-4.5	-4.8	-4.9	-	-	-4.7	-4.7	-4.8	-4.7
Colour, Konica Minolta CM5 (dry)										
L*	93.84	93.92	94.14	94.20	-	-	93.90	93.88	93.71	93.96
a*	0.53	0.50	0.53	0.48	-	-	0.47	0.49	0.50	0.51
b*	8.67	8.88	8.70	9.14	-	-	8.91	9.21	10.02	8.93
RVA										
Peak Viscosity, cP	2204	2184	2367	2445	-	-	2158	2084	2437	2474
Minimum viscosity (Trough), cP	1712	1686	1744	1775	-	-	1720	1701	1900	1787
Final Viscosity, cP	2427	2436	2691	2792	-	-	2397	2317	2794	2860
Peak Time, min	7.00	7.00	7.00	7.00	-	-	7.00	6.93	7.00	7.00
GLUTEN										
Wet gluten (14% mb), %	32.5	29.5	28.1	24.1	-	-	29.2	27.3	23.6	28.4
Dry gluten (14% mb), %	11.1	9.6	9.0	7.9	-	-	10.0	9.1	7.6	9.2
Gluten Index	96	96	94	96	-	-	96	96	98	95
FARINOGRAM										
Water absorption (14% mb), %	60.4	59.6	59.4	58.3	-	-	59.2	58.7	57.7	59.8
Development time, min	5.2	5.4	3.4	1.6	-	-	6.1	4.4	1.4	3.6
Stability, min	11.1	9.5	9.0	8.1	-	-	12.0	10.5	6.2	9.6
Mixing tolerance index, BU	35	43	40	32	-	-	38	27	40	31
EXTENSOGRAM (45 min pull)										
Area, cm ²	64	102	84	75	-	-	110	96	60	100
Maximum height, BU	290	366	336	344	-	-	413	403	262	393
Extensibility, mm	153	200	181	158	-	-	192	174	160	182
ALVEOGRAM										
Strength (S), cm ²	39.4	42.4	35.2	33.8	-	-	36.1	33.6	22.8	38.8
Stability (P), mm	79	78	82	82	-	-	78	76	67	84
Distensibility (L), mm	119	148	106	101	-	-	107	109	87	117
Configuration ratio (P/L)	0.66	0.53	0.77	0.81	-	-	0.73	0.70	0.77	0.72
MIXOGRAM										
Peak time, min	2.8	2.6	2.8	3.3	-	-	3.3	2.9	2.3	2.9
100 g BAKING TEST										
Loaf volume, cm ³	1026	968	982	904	-	-	973	958	934	1005
Evaluation (see page 72)	0	0	0	0	-	-	0	0	0	0

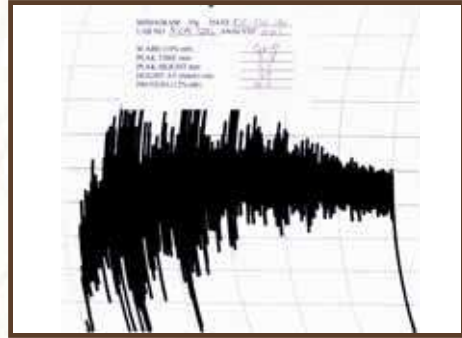
Rheological Graphs Per Production Region

MIXOGRAM

5

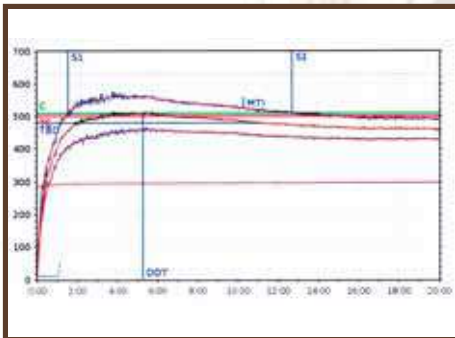


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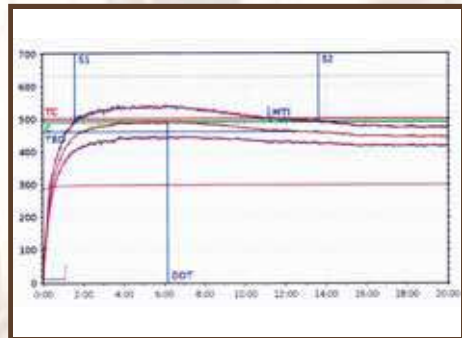


FARINOGRAM

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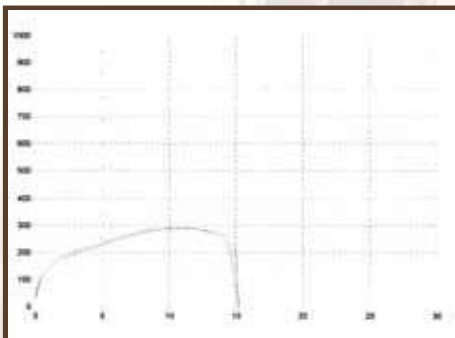


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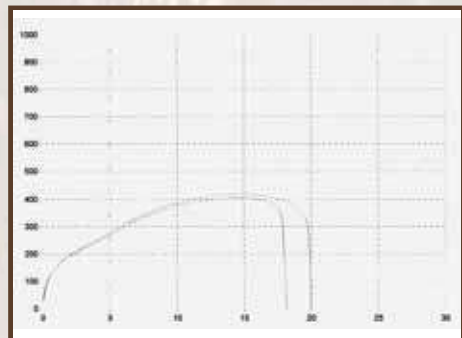


EXTENSOGRAM

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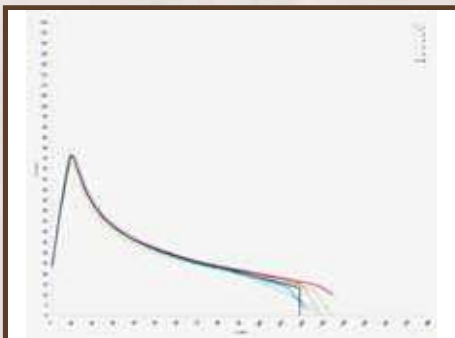


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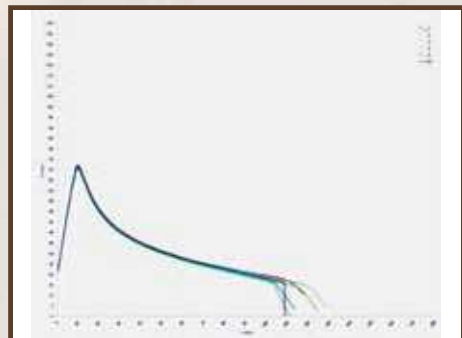


ALVEOGRAM

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South African quality data per production region

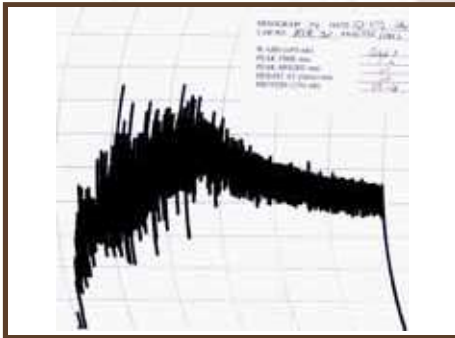
IRRIGATION WHEAT

PRODUCTION REGION	(10) Griqualand West Region					(11) Vaalharts Region				
	WHEAT									
	ave	min	max	stdev		ave	min	max	stdev	
Protein (12% mb), %	13.1	10.9	14.2	0.88		12.2	11.2	13.6	0.63	
Falling number, sec	380	335	433	34.93		408	344	510	47.60	
Moisture, %	9.4	8.4	10.5	0.72		10.2	9.5	11.1	0.49	
1000 Kernel mass (13% mb), g	37.4	34.2	39.3	1.35		40.1	37.8	42.2	1.30	
Hectolitre mass (dirty), kg/hl	83.8	81.1	85.5	1.13		83.6	82.5	84.8	0.89	
Screenings (<1.8 mm sieve), %	0.98	0.49	2.18	0.54		0.91	0.29	2.38	0.65	
Total damaged kernels, %	0.59	0.20	1.16	0.26		0.48	0.10	1.00	0.29	
Combined deviations, %	1.74	0.84	2.90	0.61		1.75	0.78	2.88	0.60	
Number of samples	17					11				
MIXOGRAM (Quadromat Junior)										
	ave	min	max	stdev		ave	min	max	stdev	
Peak time, min	2.7	2.4	3.4	0.30		3.1	2.9	3.4	0.18	
Tail height (6 min), mm	46	41	53	3.37		52	47	58	3.49	
Number of samples	17					11				
COMPOSITE SAMPLES										
CLASS AND GRADE	Super	Grade 1	Grade 2	Grade 3	COW	Super	Grade 1	Grade 2	Grade 3	COW
Bühler Extraction, %	73.9	75.7	-	-	-	73.8	74.6	-	-	-
FLOUR										
Protein (12% mb), %	12.05	10.77	-	-	-	12.23	11.08	-	-	-
Moisture, %	13.8	13.4	-	-	-	12.9	13.3	-	-	-
Ash (db), %	0.60	0.60	-	-	-	0.61	0.60	-	-	-
Colour, KJ (wet)	-5.0	-5.0	-	-	-	-4.8	-5.0	-	-	-
Colour, Konica Minolta CM5 (dry)										
L*	93.58	94.01	-	-	-	93.31	93.73	-	-	-
a*	0.64	0.57	-	-	-	0.68	0.56	-	-	-
b*	11.20	9.87	-	-	-	11.26	10.95	-	-	-
RVA										
Peak Viscosity, cP	2158	2527	-	-	-	2219	2283	-	-	-
Minimum viscosity (Trough), cP	1666	2039	-	-	-	1742	1783	-	-	-
Final Viscosity, cP	2438	2935	-	-	-	2488	2538	-	-	-
Peak Time, min	7.00	7.00	-	-	-	7.00	7.00	-	-	-
GLUTEN										
Wet gluten (14% mb), %	33.1	29.6	-	-	-	32.7	30.1	-	-	-
Dry gluten (14% mb), %	11.2	9.6	-	-	-	11.2	9.9	-	-	-
Gluten Index	93	96	-	-	-	95	99	-	-	-
FARINOGRAM										
Water absorption (14% mb), %	61.5	61.6	-	-	-	60.9	60.6	-	-	-
Development time, min	6.2	5.1	-	-	-	7.0	5.2	-	-	-
Stability, min	15.4	12.2	-	-	-	12.3	9.1	-	-	-
Mixing tolerance index, BU	30	34	-	-	-	31	42	-	-	-
EXTENSOGRAM (45 min pull)										
Area, cm ²	118	106	-	-	-	125	108	-	-	-
Maximum height, BU	387	386	-	-	-	372	388	-	-	-
Extensibility, mm	225	198	-	-	-	244	204	-	-	-
ALVEOGRAM										
Strength (S), cm ²	37.0	42.7	-	-	-	43.0	41.9	-	-	-
Stability (P), mm	71	88	-	-	-	65	80	-	-	-
Distensibility (L), mm	119	123	-	-	-	177	124	-	-	-
Configuration ratio (P/L)	0.60	0.72	-	-	-	0.37	0.65	-	-	-
MIXOGRAM										
Peak time, min	3.0	2.5	-	-	-	2.8	2.9	-	-	-
100 g BAKING TEST										
Loaf volume, cm ³	1161	1086	-	-	-	1205	984	-	-	-
Evaluation (see page 72)	0	0	-	-	-	0	0	-	-	-

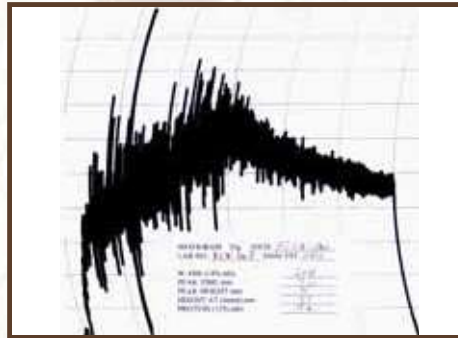
Rheological Graphs Per Production Region

MIXOGRAM

10

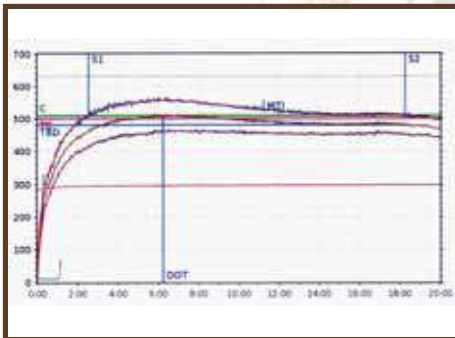


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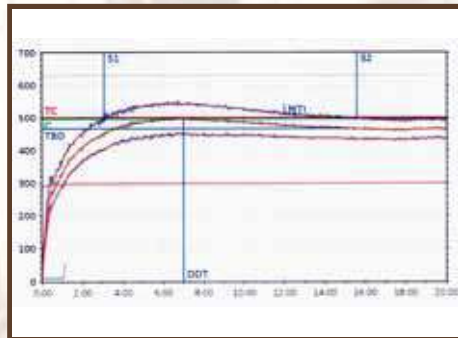


FARINOGRAM

10

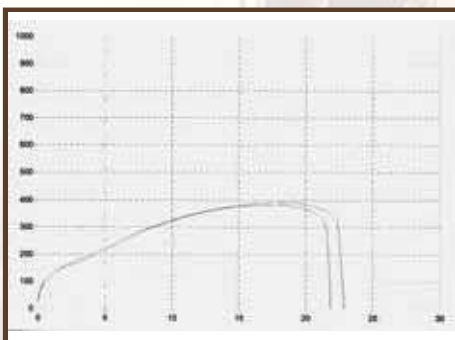


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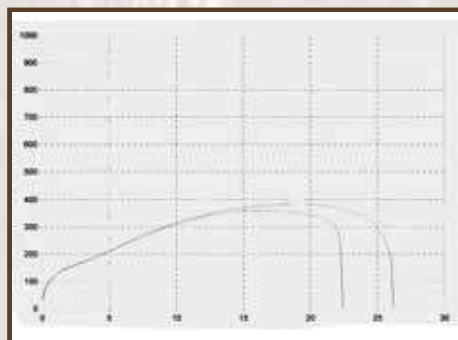


EXTENSOGRAM

10

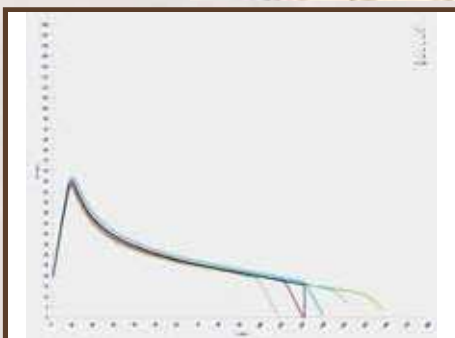


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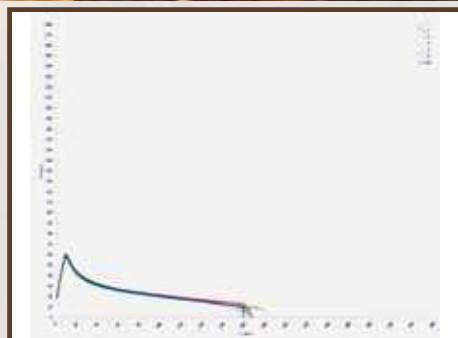


ALVEOGRAM

10



11



South African quality data per production region

IRRIGATION WHEAT

PRODUCTION REGION	(14) North West Southern Region				(15) North West South-Eastern Region					
	ave	min	max	stdev	ave	min	max	stdev		
WHEAT										
Protein (12% mb), %	13.4	13.3	13.5	0.12	11.9	9.4	13.5	1.44		
Falling number, sec	364	341	396	28.43	404	370	470	28.51		
Moisture, %	10.9	10.6	11.1	0.26	10.7	10.4	11.0	0.22		
1000 Kernel mass (13% mb), g	36.8	36.7	36.9	0.12	37.7	33.3	41.1	2.37		
Hectolitre mass (dirty), kg/hl	81.2	80.3	82.6	1.23	81.8	79.7	83.6	1.42		
Screenings (<1.8 mm sieve), %	1.34	0.67	2.00	0.67	1.59	0.70	3.76	1.03		
Total damaged kernels, %	0.77	0.30	1.34	0.53	0.30	0.00	0.58	0.22		
Combined deviations, %	2.71	1.67	4.08	1.24	2.41	0.70	4.48	1.21		
Number of samples	3				9					
MIXOGRAM (Quadromat Junior)										
	ave	min	max	stdev	ave	min	max	stdev		
Peak time, min	3.2	3.1	3.3	0.10	3.2	2.4	3.9	0.45		
Tail height (6 min), mm	51	50	53	1.53	48	38	55	5.64		
Number of samples	3				9					
COMPOSITE SAMPLES										
CLASS AND GRADE	Super	Grade 1	Grade 2	Grade 3	COW	Super	Grade 1	Grade 2	Grade 3	COW
Bühler Extraction, %	74.3	-	-	-	-	73.4	74.2	69.6	-	-
FLOUR										
Protein (12% mb), %	12.57	-	-	-	-	12.08	11.87	8.73	-	-
Moisture, %	13.6	-	-	-	-	13.6	13.6	13.4	-	-
Ash (db), %	0.60	-	-	-	-	0.61	0.59	0.54	-	-
Colour, KJ (wet)	-5.0	-	-	-	-	-5.0	-5.0	-5.0	-	-
Colour, Konica Minolta CM5 (dry)										
L*	93.78	-	-	-	-	93.66	93.79	93.53	-	-
a*	0.56	-	-	-	-	0.57	0.55	0.53	-	-
b*	10.77	-	-	-	-	10.98	10.48	11.35	-	-
RVA										
Peak Viscosity, cP	2274	-	-	-	-	2233	2131	2395	-	-
Minimum viscosity (Trough), cP	1766	-	-	-	-	1718	1741	1830	-	-
Final Viscosity, cP	2508	-	-	-	-	2498	2659	2699	-	-
Peak Time, min	7.00	-	-	-	-	7.00	7.00	7.00	-	-
GLUTEN										
Wet gluten (14% mb), %	33.6	-	-	-	-	32.7	32.6	24.9	-	-
Dry gluten (14% mb), %	11.1	-	-	-	-	11.0	11.0	7.6	-	-
Gluten Index	98	-	-	-	-	99	94	93	-	-
FARINOGRAM										
Water absorption (14% mb), %	60.9	-	-	-	-	61.7	61.8	58.6	-	-
Development time, min	6.3	-	-	-	-	7.5	6.2	1.4	-	-
Stability, min	14.3	-	-	-	-	13.5	11.1	7.3	-	-
Mixing tolerance index, BU	25	-	-	-	-	29	34	25	-	-
EXTENSOGRAM (45 min pull)										
Area, cm ²	163	-	-	-	-	147	123	72	-	-
Maximum height, BU	454	-	-	-	-	483	409	376	-	-
Extensibility, mm	266	-	-	-	-	229	226	139	-	-
ALVEOGRAM										
Strength (S), cm ²	46.9	-	-	-	-	49.2	42.0	28.1	-	-
Stability (P), mm	67	-	-	-	-	78	72	91	-	-
Distensibility (L), mm	187	-	-	-	-	154	148	65	-	-
Configuration ratio (P/L)	0.36	-	-	-	-	0.51	0.49	1.40	-	-
MIXOGRAM										
Peak time, min	3.1	-	-	-	-	3.0	2.8	2.9	-	-
100 g BAKING TEST										
Loaf volume, cm ³	1227	-	-	-	-	1222	1260	905	-	-
Evaluation (see page 72)	0	-	-	-	-	0	0	0	-	-

South African quality data per production region

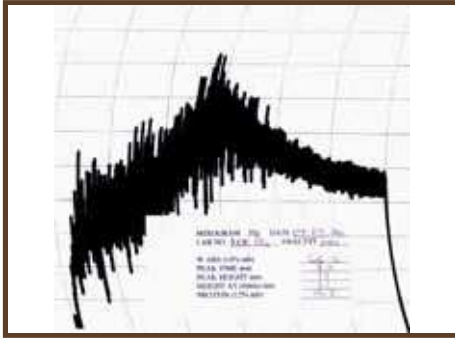
IRRIGATION WHEAT

PRODUCTION REGION	(17)				(18)					
	North West Central Northern Region (Ottosdal)				North West Central Region (Ventersdorp)					
WHEAT										
	ave	min	max	stdev	ave	min	max	stdev		
Protein (12% mb), %	12.0	10.1	15.1	2.19	12.5	11.0	13.7	0.99		
Falling number, sec	383	333	403	33.33	374	236	455	73.59		
Moisture, %	11.2	11.1	11.4	0.15	10.9	10.5	11.3	0.31		
1000 Kernel mass (13% mb), g	42.7	39.4	45.9	2.72	36.6	33.5	39.2	2.00		
Hectolitre mass (dirty), kg/hl	81.7	80.6	83.5	1.29	82.2	80.3	84.2	1.41		
Screenings (<1.8 mm sieve), %	0.04	0.00	0.12	0.06	1.80	1.01	4.28	1.25		
Total damaged kernels, %	1.97	0.22	3.66	1.43	0.61	0.26	0.88	0.27		
Combined deviations, %	2.20	0.24	4.18	1.62	2.54	1.80	4.60	1.04		
Number of samples	4				6					
MIXOGRAM (Quadromat Junior)										
	ave	min	max	stdev	ave	min	max	stdev		
Peak time, min	2.8	2.4	3.2	0.39	3.5	2.8	3.9	0.41		
Tail height (6 min), mm	46	38	51	6.56	52	41	62	6.80		
Number of samples	4				6					
COMPOSITE SAMPLES										
CLASS AND GRADE	Super	Grade 1	Grade 2	Grade 3	COW	Super	Grade 1	Grade 2	Grade 3	COW
	Bühler Extraction, %	-	73.7	-	-	-	71.7	73.7	-	-
FLOUR										
Protein (12% mb), %	-	11.14	-	-	-	11.60	11.03	-	-	-
Moisture, %	-	13.9	-	-	-	13.7	13.6	-	-	-
Ash (db), %	-	0.63	-	-	-	0.57	0.60	-	-	-
Colour, KJ (wet)	-	-4.7	-	-	-	-4.5	-5.0	-	-	-
Colour, Konica Minolta CM5 (dry)										
L*	-	93.06	-	-	-	93.70	93.96	-	-	-
a*	-	0.53	-	-	-	0.52	0.53	-	-	-
b*	-	11.38	-	-	-	9.36	9.52	-	-	-
RVA										
Peak Viscosity, cP	-	2411	-	-	-	1548	2397	-	-	-
Minimum viscosity (Trough), cP	-	1879	-	-	-	1266	1804	-	-	-
Final Viscosity, cP	-	2653	-	-	-	1654	2656	-	-	-
Peak Time, min	-	7.00	-	-	-	6.27	7.00	-	-	-
GLUTEN										
Wet gluten (14% mb), %	-	31.6	-	-	-	31.6	29.2	-	-	-
Dry gluten (14% mb), %	-	10.5	-	-	-	10.6	9.5	-	-	-
Gluten Index	-	95	-	-	-	96	95	-	-	-
FARINOGRAM										
Water absorption (14% mb), %	-	62.1	-	-	-	60.3	60.2	-	-	-
Development time, min	-	4.1	-	-	-	7.1	6.1	-	-	-
Stability, min	-	7.2	-	-	-	13.4	14.3	-	-	-
Mixing tolerance index, BU	-	45	-	-	-	26	20	-	-	-
EXTENSOGRAM (45 min pull)										
Area, cm ²	-	106	-	-	-	150	145	-	-	-
Maximum height, BU	-	357	-	-	-	504	519	-	-	-
Extensibility, mm	-	215	-	-	-	224	210	-	-	-
ALVEOGRAM										
Strength (S), cm ²	-	33.9	-	-	-	40.4	46.6	-	-	-
Stability (P), mm	-	70	-	-	-	73	89	-	-	-
Distensibility (L), mm	-	134	-	-	-	123	113	-	-	-
Configuration ratio (P/L)	-	0.52	-	-	-	0.59	0.79	-	-	-
MIXOGRAM										
Peak time, min	-	2.4	-	-	-	3.2	3.3	-	-	-
100 g BAKING TEST										
Loaf volume, cm ³	-	1067	-	-	-	1090	1037	-	-	-
Evaluation (see page 72)	-	0	-	-	-	0	0	-	-	-

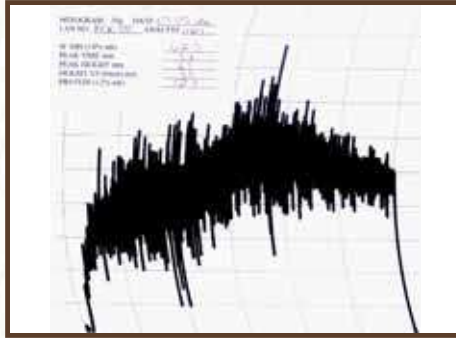
Rheological Graphs Per Production Region

MIXOGRAM

17

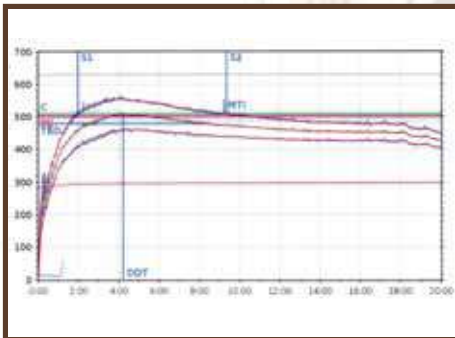


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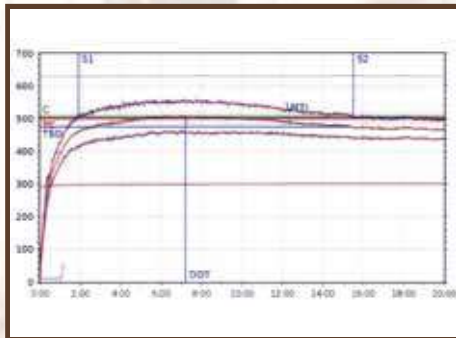


FARINOGRAM

17

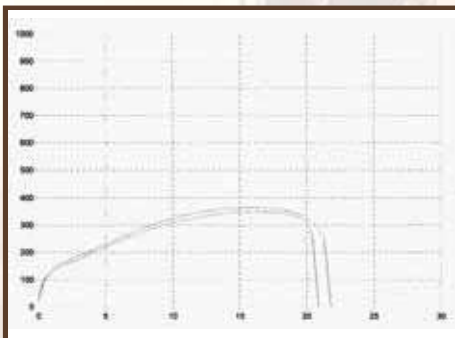


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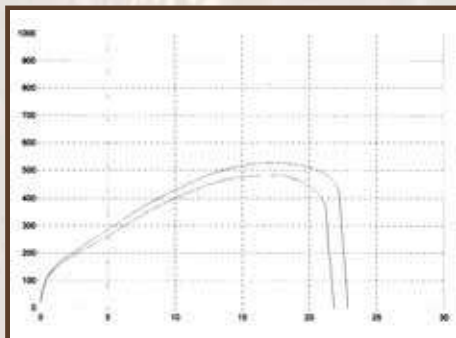


EXTENSOGRAM

17

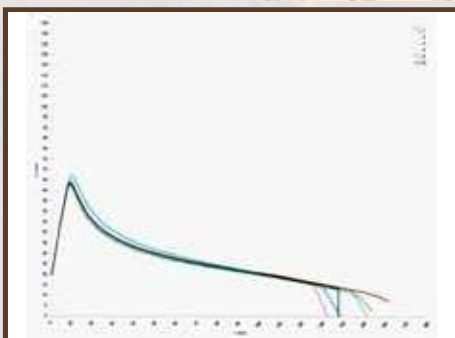


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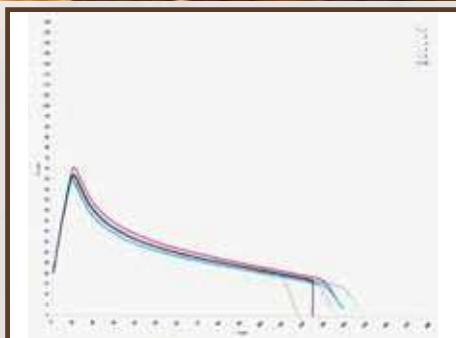


ALVEOGRAM

17



18



South African quality data per production region

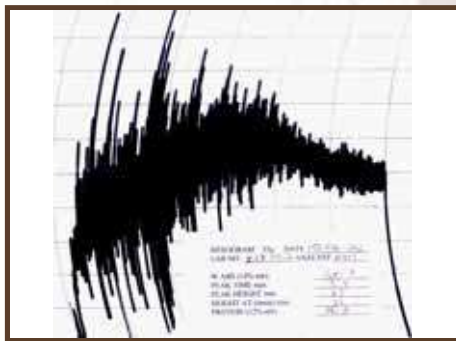
SUMMER RAINFALL AND IRRIGATION

PRODUCTION REGION	(20)				(21)					
	North West Eastern Region				Free State North-Western Region (Viljoenskroon)					
WHEAT										
	ave	min	max	stdev	ave	min	max	stdev		
Protein (12% mb), %	12.0	11.3	12.9	0.83	13.1	12.7	13.4	0.49		
Falling number, sec	389	358	414	28.48	285	258	311	37.48		
Moisture, %	10.8	10.5	11.0	0.25	11.3	11.2	11.3	0.07		
1000 Kernel mass (13% mb), g	37.4	32.8	41.3	4.29	35.2	34.7	35.6	0.64		
Hectolitre mass (dirty), kg/hl	82.5	81.2	83.3	1.16	77.4	75.9	78.9	2.12		
Screenings (<1.8 mm sieve), %	0.76	0.22	1.47	0.64	5.81	3.21	8.40	3.67		
Total damaged kernels, %	0.23	0.10	0.40	0.15	1.23	0.52	1.94	1.00		
Combined deviations, %	1.15	0.66	2.09	0.81	8.05	4.77	11.32	4.63		
Number of samples	3				2					
MIXOGRAM (Quadromat Junior)										
	ave	min	max	stdev	ave	min	max	stdev		
Peak time, min	3.6	3.5	3.7	0.10	4.0	3.5	4.5	0.71		
Tail height (6 min), mm	52	47	55	4.16	49	48	49	0.71		
Number of samples	3				2					
COMPOSITE SAMPLES										
CLASS AND GRADE	Super	Grade 1	Grade 2	Grade 3	COW	Super	Grade 1	Grade 2	Grade 3	COW
Bühler Extraction, %	-	71.9	-	-	-	-	-	-	-	73.0
FLOUR										
Protein (12% mb), %	-	10.79	-	-	-	-	-	-	-	10.38
Moisture, %	-	13.5	-	-	-	-	-	-	-	13.9
Ash (db), %	-	0.61	-	-	-	-	-	-	-	0.61
Colour, KJ (wet)	-	-4.9	-	-	-	-	-	-	-	-3.2
Colour, Konica Minolta CM5 (dry)										
L*	-	93.66	-	-	-	-	-	-	-	92.72
a*	-	0.52	-	-	-	-	-	-	-	0.78
b*	-	9.63	-	-	-	-	-	-	-	10.71
RVA										
Peak Viscosity, cP	-	2326	-	-	-	-	-	-	-	1799
Minimum viscosity (Trough), cP	-	1732	-	-	-	-	-	-	-	1407
Final Viscosity, cP	-	2588	-	-	-	-	-	-	-	1924
Peak Time, min	-	7.00	-	-	-	-	-	-	-	6.33
GLUTEN										
Wet gluten (14% mb), %	-	30.2	-	-	-	-	-	-	-	29.3
Dry gluten (14% mb), %	-	9.7	-	-	-	-	-	-	-	9.5
Gluten Index	-	95	-	-	-	-	-	-	-	96
FARINOGRAM										
Water absorption (14% mb), %	-	61.2	-	-	-	-	-	-	-	58.8
Development time, min	-	5.5	-	-	-	-	-	-	-	6.2
Stability, min	-	9.4	-	-	-	-	-	-	-	12.2
Mixing tolerance index, BU	-	43	-	-	-	-	-	-	-	19
EXTENSOGRAM (45 min pull)										
Area, cm ²	-	124	-	-	-	-	-	-	-	134
Maximum height, BU	-	472	-	-	-	-	-	-	-	466
Extensibility, mm	-	200	-	-	-	-	-	-	-	212
ALVEOGRAM										
Strength (S), cm ²	-	46.5	-	-	-	-	-	-	-	39.3
Stability (P), mm	-	92	-	-	-	-	-	-	-	75
Distensibility (L), mm	-	124	-	-	-	-	-	-	-	114
Configuration ratio (P/L)	-	0.74	-	-	-	-	-	-	-	0.66
MIXOGRAM										
Peak time, min	-	2.9	-	-	-	-	-	-	-	4.1
100 g BAKING TEST										
Loaf volume, cm ³	-	987	-	-	-	-	-	-	-	940
Evaluation (see page 72)	-	0	-	-	-	-	-	-	-	0

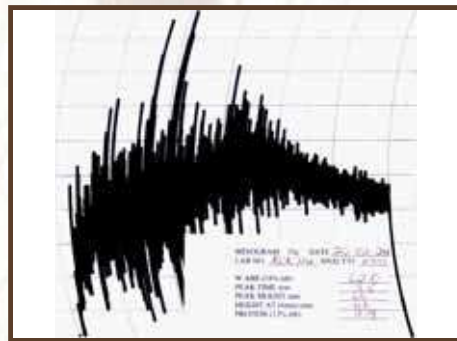
Rheological Graphs Per Production Region

MIXOGRAM

20

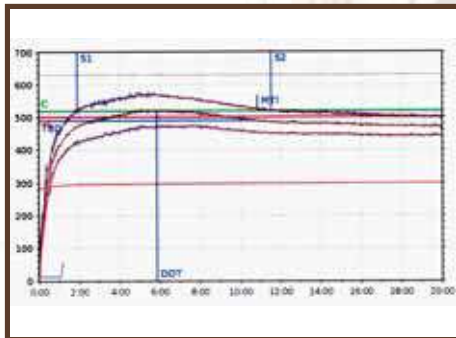


21



FARINOGRAM

20

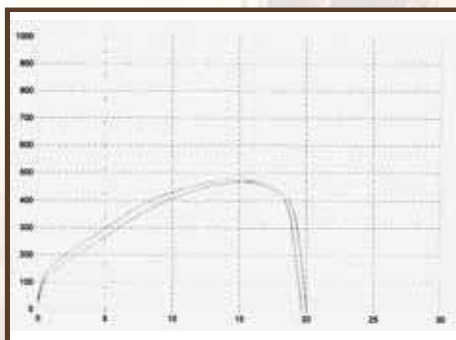


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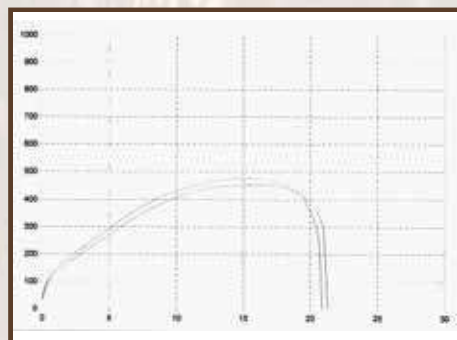


EXTENSOGRAM

20

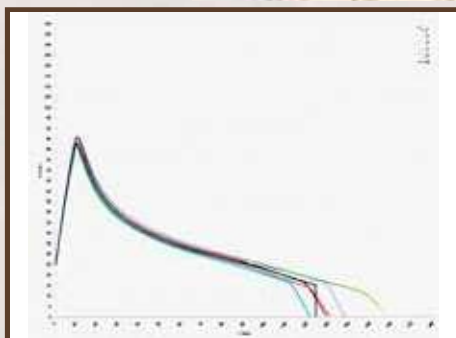


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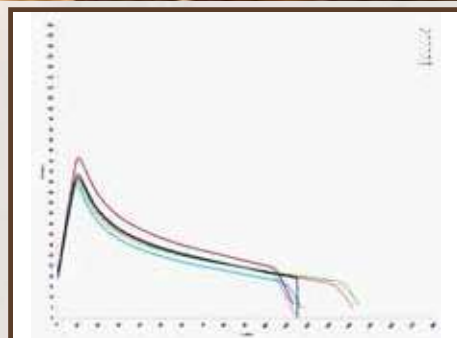


ALVEOGRAM

20



21



South African quality data per production region

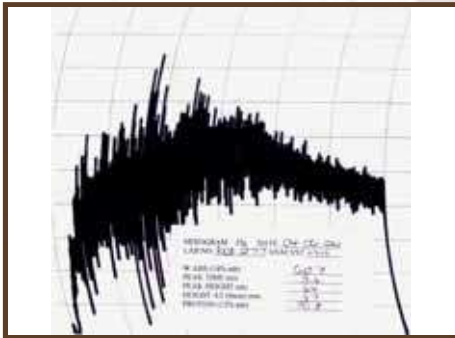
SUMMER RAINFALL AND IRRIGATION WHEAT

PRODUCTION REGION	(23)				(24)					
	Free State North-Western Region (Bultfontein)				Free State Central Region					
WHEAT										
	ave	min	max	stdev	ave	min	max	stdev		
Protein (12% mb), %	11.6	10.1	13.7	1.20	12.0	9.8	14.2	1.24		
Falling number, sec	386	245	551	80.18	363	277	431	44.82		
Moisture, %	11.1	10.5	11.8	0.42	11.0	9.6	12.6	0.64		
1000 Kernel mass (13% mb), g	34.9	28.0	41.0	4.02	35.4	28.5	41.4	3.93		
Hectolitre mass (dirty), kg/hl	81.3	77.4	83.3	1.77	79.3	69.6	83.8	3.71		
Screenings (<1.8 mm sieve), %	1.95	0.33	7.01	1.84	2.65	0.54	9.18	1.98		
Total damaged kernels, %	0.30	0.00	1.00	0.28	0.62	0.00	5.50	1.17		
Combined deviations, %	2.93	0.87	8.73	2.25	3.87	1.42	10.14	2.43		
Number of samples	13				20					
MIXOGRAM (Quadromat Junior)										
Peak time, min	3.3	2.3	4.7	0.75	3.2	2.8	3.8	0.33		
Tail height (6 min), mm	49	37	58	5.68	48	34	57	5.04		
Number of samples	13				20					
COMPOSITE SAMPLES										
CLASS AND GRADE	Super	Grade 1	Grade 2	Grade 3	COW	Super	Grade 1	Grade 2	Grade 3	COW
Bühler Extraction, %	72.2	72.0	71.6	70.6	-	72.5	71.3	72.0	74.3	-
FLOUR										
Protein (12% mb), %	11.89	10.75	9.38	8.59	-	11.40	10.79	10.11	9.15	-
Moisture, %	13.2	13.0	13.4	13.4	-	13.5	13.5	13.5	13.7	-
Ash (db), %	0.49	0.53	0.53	0.52	-	0.60	0.61	0.59	0.68	-
Colour, KJ (wet)	-5.0	-4.9	-5.0	-5.0	-	-4.6	-4.9	-4.9	-5.0	-
Colour, Konica Minolta CM5 (dry)										
L*	93.52	93.55	93.85	93.89	-	93.75	93.83	93.77	93.87	-
a*	0.51	0.47	0.44	0.44	-	0.44	0.53	0.45	0.57	-
b*	11.22	10.77	11.22	11.03	-	10.59	10.45	11.42	11.10	-
RVA										
Peak Viscosity, cP	2162	1605	2390	1930	-	1879	2233	2357	2286	-
Minimum viscosity (Trough), cP	1637	1427	1881	1576	-	1644	1764	1897	1796	-
Final Viscosity, cP	2651	1835	2814	2372	-	2055	2488	2667	2625	-
Peak Time, min	7.00	6.60	7.00	7.00	-	6.87	7.00	7.00	7.00	-
GLUTEN										
Wet gluten (14% mb), %	33.8	32.9	23.8	22.9	-	29.7	29.9	26.7	23.9	-
Dry gluten (14% mb), %	11.7	10.5	7.4	7.3	-	10.0	9.6	8.7	7.6	-
Gluten Index	93	94	97	97	-	98	95	97	97	-
FARINOGRAM										
Water absorption (14% mb), %	62.4	60.4	59.7	58.6	-	60	60.2	59.6	57.3	-
Development time, min	6.2	5.4	12.1	4.2	-	7.2	3.3	5.2	4.5	-
Stability, min	20.0	8.1	20.0	8.6	-	13.1	8.2	8.4	7.2	-
Mixing tolerance index, BU	23	43	7	33	-	34	38	43	52	-
EXTENSOGRAM (45 min pull)										
Area, cm ²	110	95	141	73	-	110	100	82	83	-
Maximum height, BU	401	379	612	382	-	399	379	315	339	-
Extensibility, mm	200	179	172	137	-	202	192	188	177	-
ALVEOGRAM										
Strength (S), cm ²	43.9	39.1	43.9	32.3	-	37.2	37.8	34.1	27.8	-
Stability (P), mm	94	85	132	108	-	74	77	76	60	-
Distensibility (L), mm	106	110	59	61	-	117	124	118	132	-
Configuration ratio (P/L)	0.89	0.77	2.24	1.77	-	0.63	0.62	0.64	0.45	-
MIXOGRAM										
Peak time, min	2.8	2.5	4.4	2.6	-	3.1	2.8	3.0	3.1	-
100 g BAKING TEST										
Loaf volume, cm ³	1088	1031	868	845	-	1045	1042	1017	949	-
Evaluation (see page 72)	0	0	0	0	-	0	0	0	0	-

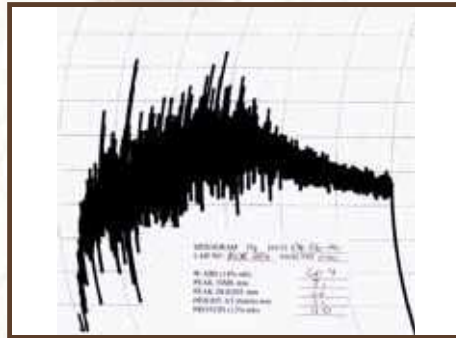
Rheological Graphs Per Production Region

MIXOGRAM

23

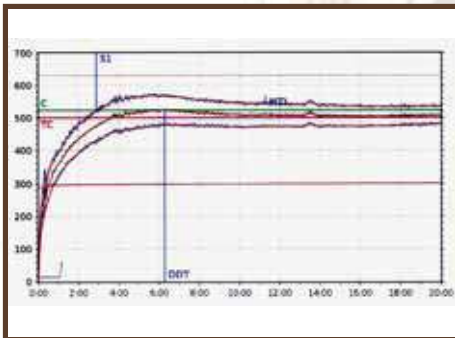


24



FARINOGRAM

23

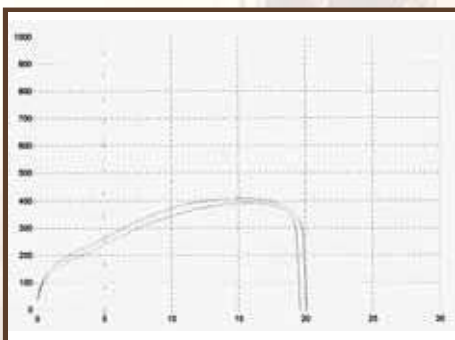


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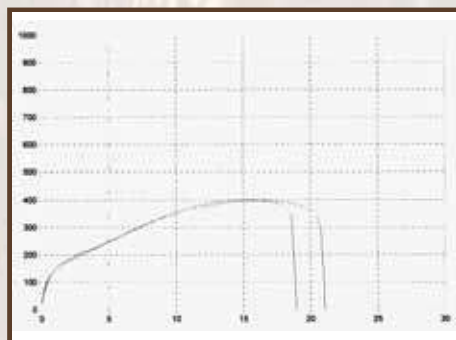


EXTENSOGRAM

23

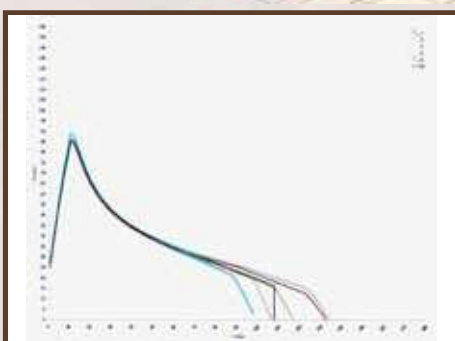


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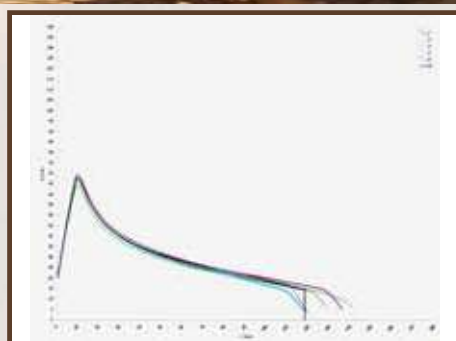


ALVEOGRAM

23



24



South African quality data per production region

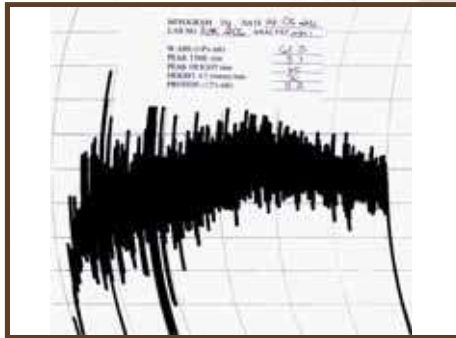
SUMMER RAINFALL AND IRRIGATION WHEAT

PRODUCTION REGION	(25)				(26)						
	Free State South-Western Region				Free State South-Eastern Region						
WHEAT											
	ave	min	max	stdev	ave	min	max	stdev			
Protein (12% mb), %	12.5	10.9	13.9	0.97	11.4	8.9	13.3	1.44			
Falling number, sec	360	295	415	34.83	384	319	495	48.26			
Moisture, %	11.8	9.6	13.1	0.83	11.3	10.7	12.3	0.47			
1000 Kernel mass (13% mb), g	37.6	24.9	45.5	5.57	36.0	31.5	42.5	3.36			
Hectolitre mass (dirty), kg/hl	77.7	73.3	83.7	2.52	81.0	77.7	83.2	1.72			
Screenings (<1.8 mm sieve), %	0.99	0.06	2.51	0.62	1.64	0.23	7.56	2.21			
Total damaged kernels, %	0.27	0.00	0.76	0.21	0.39	0.00	1.30	0.36			
Combined deviations, %	1.63	0.51	3.09	0.83	2.43	0.65	8.62	2.33			
Number of samples	21				13						
MIXOGRAM (Quadromat Junior)											
	ave	min	max	stdev	ave	min	max	stdev			
Peak time, min	3.8	2.8	5.0	0.65	3.5	2.3	5.2	0.79			
Tail height (6 min), mm	49	40	55	3.68	48	37	60	6.62			
Number of samples	21				13						
COMPOSITE SAMPLES											
CLASS AND GRADE	Super	Grade 1	Grade 2	Grade 3	COW	Super	Grade 1	Grade 2	Grade 3	COW	
Bühler Extraction, %	72.8	72.2	73.3	71.3	-	73.2	73.6	73.4	-	-	
FLOUR											
Protein (12% mb), %	12.05	10.88	10.10	11.45	-	12.33	11.44	10.10	-	-	
Moisture, %	13.7	13.6	13.7	13.6	-	13.7	13.5	13.7	-	-	
Ash (db), %	0.59	0.61	0.60	0.63	-	0.61	0.63	0.63	-	-	
Colour, KJ (wet)	-4.6	-4.2	-5.0	-4.3	-	-5.0	-4.5	-5.0	-	-	
Colour, Konica Minolta CM5 (dry)											
L*	93.59	93.53	93.85	93.81	-	93.76	93.47	93.94	-	-	
a*	0.43	0.38	0.49	0.36	-	0.56	0.61	0.57	-	-	
b*	10.71	10.44	10.95	10.23	-	10.06	9.86	9.52	-	-	
RVA											
Peak Viscosity, cP	2298	1737	2256	2274	-	2605	2578	2434	-	-	
Minimum viscosity (Trough), cP	1686	1530	1732	1573	-	1935	1939	1767	-	-	
Final Viscosity, cP	2593	1901	2537	2549	-	2796	2860	2756	-	-	
Peak Time, min	7.00	6.73	7.00	7.00	-	7.00	7.00	7.00	-	-	
GLUTEN											
Wet gluten (14% mb), %	29.9	27.7	26.7	30.6	-	33.2	30.5	28.0	-	-	
Dry gluten (14% mb), %	10.1	9.3	8.8	10.0	-	11.1	10.2	9.3	-	-	
Gluten Index	96	98	99	95	-	93	98	95	-	-	
FARINOGRAM											
Water absorption (14% mb), %	61.2	60.0	59.6	58.5	-	62.6	60.1	59.5	-	-	
Development time, min	8.6	4.6	5.6	7.0	-	7.6	5.6	5.2	-	-	
Stability, min	17.0	12.6	11.4	15.0	-	12.4	11.2	8.2	-	-	
Mixing tolerance index, BU	26	21	33	34	-	36	29	49	-	-	
EXTENSOGRAM (45 min pull)											
Area, cm ²	134	100	107	119	-	160	132	88	-	-	
Maximum height, BU	433	393	456	435	-	432	440	345	-	-	
Extensibility, mm	227	185	177	207	-	275	222	185	-	-	
ALVEOGRAM											
Strength (S), cm ²	49.2	40.8	42.4	39.4	-	48.6	42.8	32.6	-	-	
Stability (P), mm	89.0	91.0	94	70	-	75	75	71	-	-	
Distensibility (L), mm	125	97	99	136	-	177	145	120	-	-	
Configuration ratio (P/L)	0.71	0.94	0.95	0.51	-	0.42	0.52	0.59	-	-	
MIXOGRAM											
Peak time, min	3.3	3.8	3.7	3.3	-	2.6	3.2	2.9	-	-	
100 g BAKING TEST											
Loaf volume, cm ³	1110	1046	945	1119	-	1230	1085	1047	-	-	
Evaluation (see page 72)	0	0	0	0	-	0	0	0	-	-	

Rheological Graphs Per Production Region

MIXOGRAM

25



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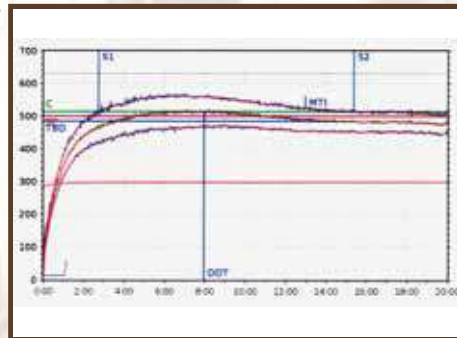


FARINOGRAM

25

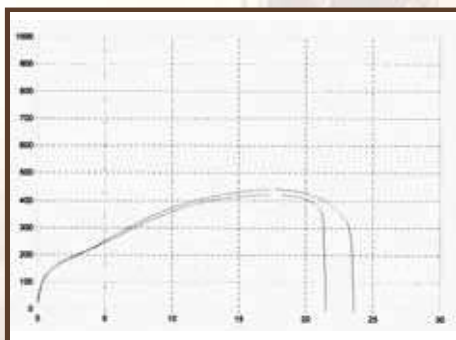


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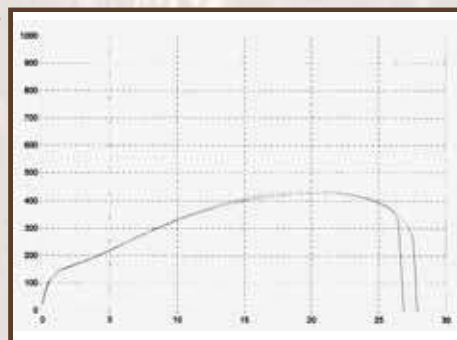


EXTENSOGRAM

25

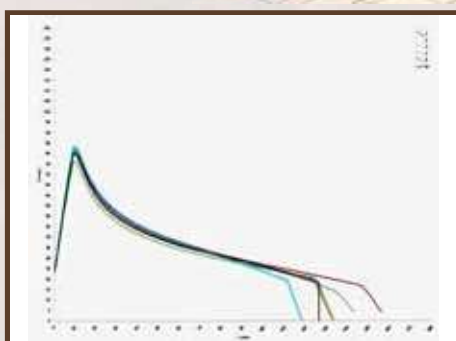


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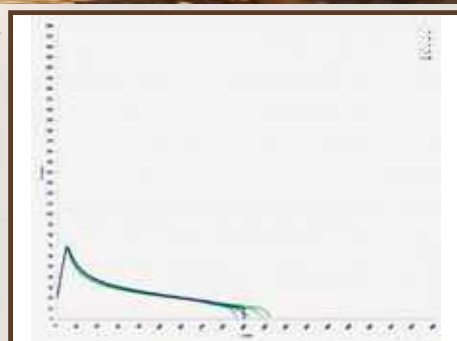


ALVEOGRAM

25



26



South African quality data per production region

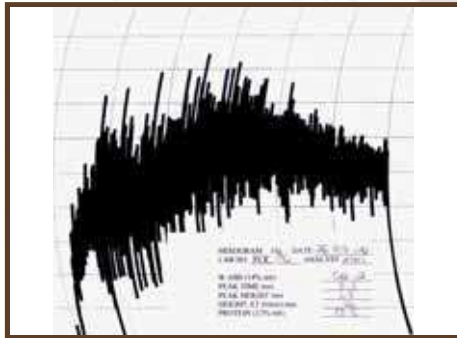
SUMMER RAINFALL AND IRRIGATION WHEAT

PRODUCTION REGION	(27)				(28)					
	Free State		Northern Region		Free State		Eastern Region			
WHEAT										
	ave	min	max	stdev	ave	min	max	stdev		
Protein (12% mb), %	13.5	12.2	14.8	1.84	12.8	10.7	14.9	1.22		
Falling number, sec	354	333	374	28.99	360	291	414	37.03		
Moisture, %	11.5	11.5	11.5	0.00	11.5	10.5	12.3	0.51		
1000 Kernel mass (13% mb), g	33.2	31.1	35.2	2.90	37.2	29.4	42.4	3.56		
Hectolitre mass (dirty), kg/hl	78.7	78.3	79.1	0.57	81.0	75.5	84.3	2.67		
Screenings (<1.8 mm sieve), %	0.47	0.40	0.54	0.10	1.05	0.13	2.89	0.68		
Total damaged kernels, %	2.35	2.00	2.70	0.49	0.52	0.02	1.26	0.30		
Combined deviations, %	3.62	2.50	4.74	1.58	1.92	0.25	4.47	0.98		
Number of samples	2				16					
MIXOGRAM (Quadromat Junior)										
	ave	min	max	stdev	ave	min	max	stdev		
Peak time, min	3.1	2.8	3.3	0.35	3.3	2.3	4.4	0.62		
Tail height (6 min), mm	56	55	56	0.71	49	27	60	7.81		
Number of samples	2				16					
COMPOSITE SAMPLES										
CLASS AND GRADE	Super	Grade 1	Grade 2	Grade 3	COW	Super	Grade 1	Grade 2	Grade 3	COW
Bühler Extraction, %	-	73.2	-	-	-	73.5	-	73.0	71.2	-
FLOUR										
Protein (12% mb), %	-	11.78	-	-	-	12.37	-	9.10	14.06	-
Moisture, %	-	13.8	-	-	-	13.6	-	13.4	13.4	-
Ash (db), %	-	0.66	-	-	-	0.57	-	0.55	0.56	-
Colour, KJ (wet)	-	-4.7	-	-	-	-4.9	-	-4.7	-3.8	-
Colour, Konica Minolta CM5 (dry)										
L*	-	93.37	-	-	-	93.82	-	94.45	93.12	-
a*	-	0.56	-	-	-	0.49	-	0.36	0.48	-
b*	-	10.40	-	-	-	9.96	-	9.48	10.32	-
RVA										
Peak Viscosity, cP	-	2270	-	-	-	2327	-	2304	2403	-
Minimum viscosity (Trough), cP	-	1700	-	-	-	1771	-	1877	1813	-
Final Viscosity, cP	-	2549	-	-	-	2611	-	2513	2663	-
Peak Time, min	-	7.00	-	-	-	7.00	-	7.00	7.00	-
GLUTEN										
Wet gluten (14% mb), %	-	32.1	-	-	-	32.0	-	23.9	31.6	-
Dry gluten (14% mb), %	-	10.4	-	-	-	11.1	-	6.9	10.6	-
Gluten Index	-	93	-	-	-	95	-	96	95	-
FARINOGRAM										
Water absorption (14% mb), %	-	61.4	-	-	-	62.5	-	54.6	63.4	-
Development time, min	-	5.2	-	-	-	7.1	-	5.0	14.4	-
Stability, min	-	11.1	-	-	-	16.1	-	6.5	20.0	-
Mixing tolerance index, BU	-	30	-	-	-	28	-	64	12	-
EXTENSOGRAM (45 min pull)										
Area, cm ²	-	124	-	-	-	125	-	71	130	-
Maximum height, BU	-	376	-	-	-	398	-	354	415	-
Extensibility, mm	-	240	-	-	-	231	-	141	230	-
ALVEOGRAM										
Strength (S), cm ²	-	35.5	-	-	-	47.1	-	24.6	55.7	-
Stability (P), mm	-	70	-	-	-	82	-	56	90	-
Distensibility (L), mm	-	137	-	-	-	145	-	108	139	-
Configuration ratio (P/L)	-	0.51	-	-	-	0.57	-	0.52	0.65	-
MIXOGRAM										
Peak time, min	-	2.7	-	-	-	2.7	-	3.5	3.4	-
100 g BAKING TEST										
Loaf volume, cm ³	-	1202	-	-	-	1122	-	921	1208	-
Evaluation (see page 72)	-	0	-	-	-	0	-	0	0	-

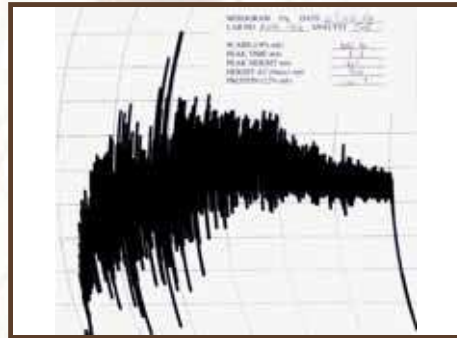
Rheological Graphs Per Production Region

MIXOGRAM

27

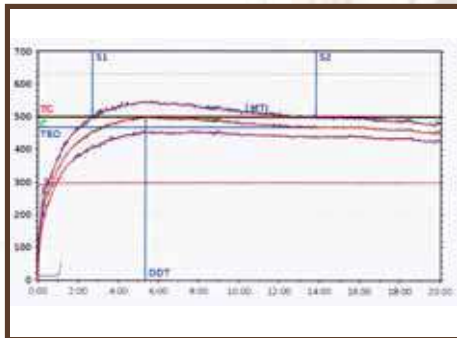


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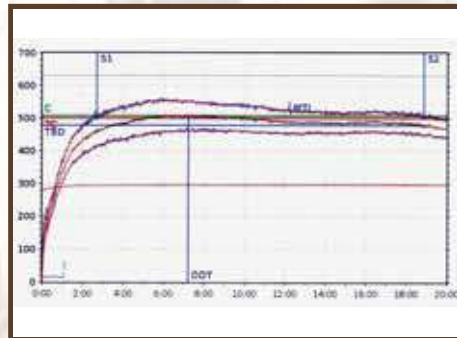


FARINOGRAM

27

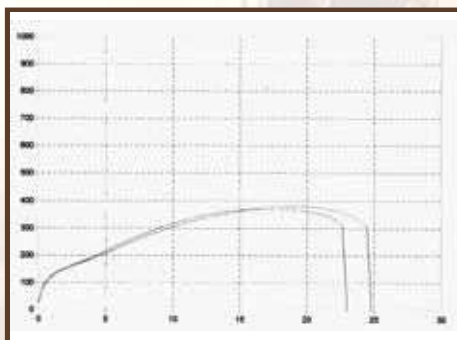


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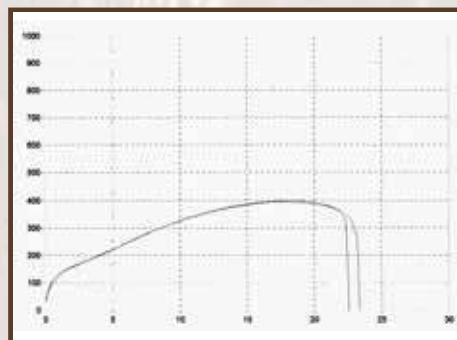


EXTENSOGRAM

27

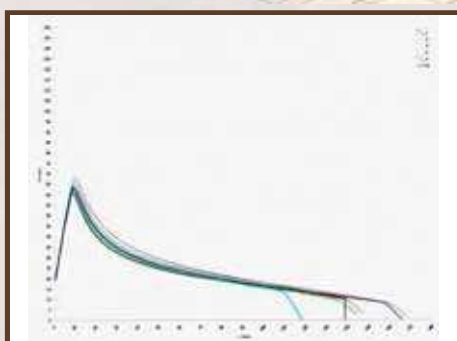


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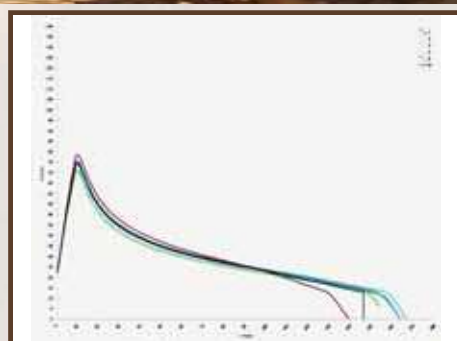


ALVEOGRAM

27



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South African quality data per production region

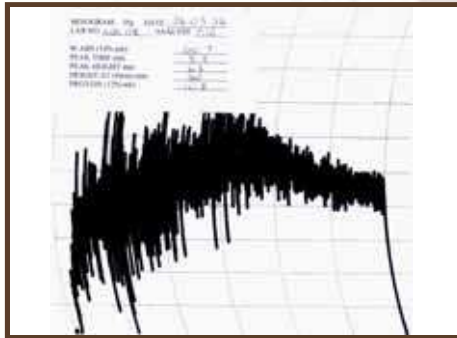
IRRIGATION WHEAT

PRODUCTION REGION	(33)				(34)						
	Mpumalanga Northern Region				Gauteng						
WHEAT											
	ave	min	max	stdev	ave	min	max	stdev			
Protein (12% mb), %	11.7	9.3	13.1	1.21	12.0	10.6	13.0	0.77			
Falling number, sec	403	342	540	65.69	348	197	408	66.54			
Moisture, %	11.3	10.9	11.6	0.23	11.0	10.4	11.7	0.49			
1000 Kernel mass (13% mb), g	36.4	32.0	42.0	3.18	38.8	33.4	45.7	3.76			
Hectolitre mass (dirty), kg/hl	81.2	78.7	83.5	1.70	84.4	82.6	86.3	1.36			
Screenings (<1.8 mm sieve), %	1.65	0.23	3.54	1.00	1.44	0.18	3.40	1.01			
Total damaged kernels, %	0.73	0.00	2.52	0.87	0.37	0.06	0.76	0.24			
Combined deviations, %	2.61	0.31	6.54	1.83	2.07	0.32	5.56	1.56			
Number of samples	8				8						
MIXOGRAM (Quadromat Junior)											
	ave	min	max	stdev	ave	min	max	stdev			
Peak time, min	3.5	2.9	3.8	0.31	3.3	2.7	3.8	0.35			
Tail height (6 min), mm	48	41	55	3.91	50	45	52	2.71			
Number of samples	8				8						
COMPOSITE SAMPLES											
CLASS AND GRADE	Super	Grade 1	Grade 2	Grade 3	COW	Super	Grade 1	Grade 2	Grade 3	COW	
	Bühler Extraction, %	73.6	74.0	74.1	-	-	73.6	74.1	73.7	-	-
FLOUR											
Protein (12% mb), %	11.96	11.17	10.59	-	-	11.70	10.88	10.50	-	-	
Moisture, %	13.4	13.3	13.7	-	-	13.7	13.5	13.7	-	-	
Ash (db), %	0.59	0.60	0.62	-	-	0.60	0.62	0.58	-	-	
Colour, KJ (wet)	-4.5	-4.7	-4.8	-	-	-5.0	-4.9	-5.0	-	-	
Colour, Konica Minolta CM5 (dry)											
L*	93.17	93.58	93.58	-	-	93.69	93.44	93.75	-	-	
a*	0.54	0.50	0.56	-	-	0.61	0.61	0.57	-	-	
b*	9.84	9.89	10.11	-	-	10.51	10.61	10.91	-	-	
RVA											
Peak Viscosity, cP	2376	2428	2451	-	-	2295	2392	2445	-	-	
Minimum viscosity (Trough), cP	1880	1855	1880	-	-	1798	1897	1927	-	-	
Final Viscosity, cP	2519	2627	2680	-	-	2502	2587	2750	-	-	
Peak Time, min	7.00	7.00	7.00	-	-	7.00	7.00	7.00	-	-	
GLUTEN											
Wet gluten (14% mb), %	32.7	29.2	27.6	-	-	30.4	28.6	27.8	-	-	
Dry gluten (14% mb), %	10.7	9.5	9.0	-	-	11.0	9.4	8.8	-	-	
Gluten Index	96	95	95	-	-	96	97	96	-	-	
FARINOGRAM											
Water absorption (14% mb), %	60.5	59.1	59.7	-	-	62.6	58.9	61.7	-	-	
Development time, min	7.0	7.0	6.2	-	-	6.3	5.1	6.5	-	-	
Stability, min	15.4	12.3	9.6	-	-	10.0	9.4	14.0	-	-	
Mixing tolerance index, BU	26	42	41	-	-	39	37	28	-	-	
EXTENSOGRAM (45 min pull)											
Area, cm ²	144	137	115	-	-	129	115	119	-	-	
Maximum height, BU	481	478	419	-	-	391	449	405	-	-	
Extensibility, mm	221	215	200	-	-	245	192	215	-	-	
ALVEOGRAM											
Strength (S), cm ²	46.9	42.5	41.0	-	-	45.3	39.4	42.7	-	-	
Stability (P), mm	78	68	78	-	-	79	74	90	-	-	
Distensibility (L), mm	144	153	124	-	-	149	127	117	-	-	
Configuration ratio (P/L)	0.54	0.44	0.63	-	-	0.53	0.58	0.77	-	-	
MIXOGRAM											
Peak time, min	3.1	3.2	3.4	-	-	2.8	3.5	3.1	-	-	
100 g BAKING TEST											
Loaf volume, cm ³	1192	1166	1034	-	-	1096	1107	1041	-	-	
Evaluation (see page 72)	0	0	0	-	-	0	0	0	-	-	

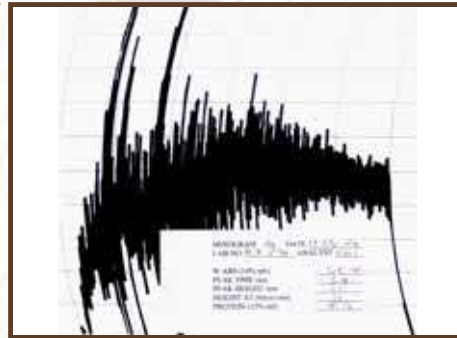
Rheological Graphs Per Production Region

MIXOGRAM

33

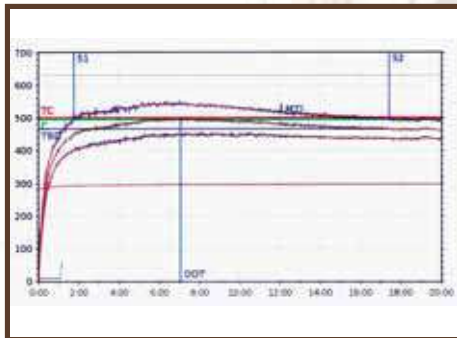


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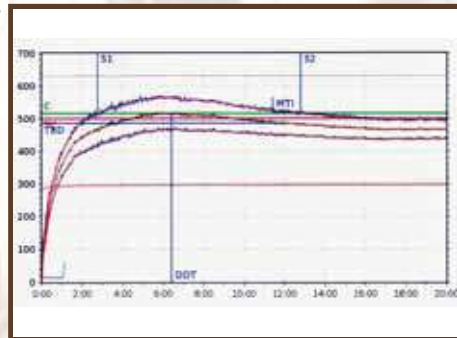


FARINOGRAM

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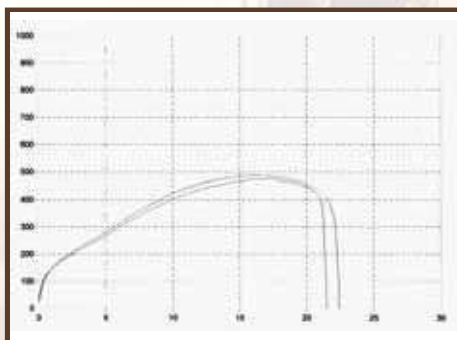


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EXTENSOGRAM

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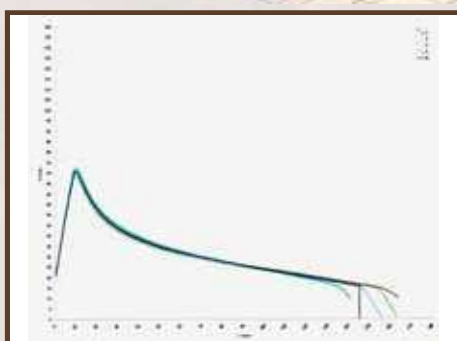


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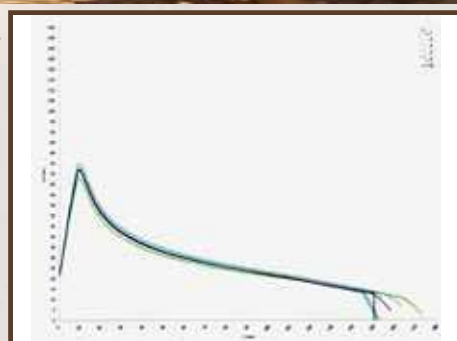


ALVEOGRAM

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South African quality data per production region

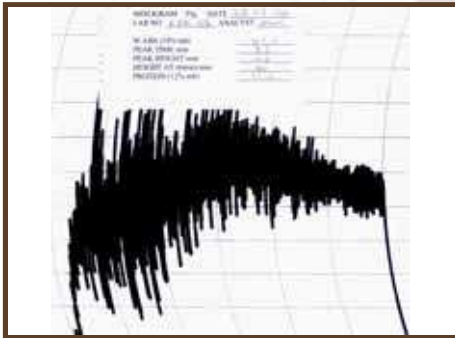
IRRIGATION WHEAT

PRODUCTION REGION	(35) Limpopo Region				(36) KwaZulu-Natal					
	WHEAT	ave	min	max	stdev	ave	min	max	stdev	
Protein (12% mb), %	12.2	9.7	14.0	1.15	13.1	11.1	14.1	0.99		
Falling number, sec	362	224	467	69.80	353	290	398	40.88		
Moisture, %	11.0	9.6	11.7	0.62	11.5	11.1	11.9	0.30		
1000 Kernel mass (13% mb), g	39.8	33.1	46.5	3.72	39.9	38.9	41.4	0.98		
Hectolitre mass (dirty), kg/hl	80.2	75.8	83.3	2.31	83.5	82.0	84.5	0.72		
Screenings (<1.8 mm sieve), %	1.52	0.15	5.69	1.60	0.67	0.28	1.51	0.40		
Total damaged kernels, %	0.68	0.00	2.46	0.72	0.21	0.00	0.38	0.15		
Combined deviations, %	2.63	0.59	8.79	1.98	1.08	0.40	1.95	0.47		
Number of samples	17				8					
MIXOGRAM (Quadromat Junior)										
	ave	min	max	stdev	ave	min	max	stdev		
Peak time, min	3.5	2.3	4.6	0.66	3.3	2.8	3.5	0.24		
Tail height (6 min), mm	51	46	60	4.40	54	50	57	2.30		
Number of samples	17				8					
COMPOSITE SAMPLES										
CLASS AND GRADE	Super	Grade 1	Grade 2	Grade 3	COW	Super	Grade 1	Grade 2	Grade 3	COW
Bühler Extraction, %	73.7	73.9	73.1	73.4	-	75.3	74.5	75.1	-	-
FLOUR										
Protein (12% mb), %	12.34	11.36	9.37	8.89	-	12.86	11.20	9.98	-	-
Moisture, %	13.8	13.6	13.8	14.1	-	13.9	13.5	14.0	-	-
Ash (db), %	0.57	0.58	0.54	0.60	-	0.53	0.55	0.56	-	-
Colour, KJ (wet)	-4.7	-4.5	-4.9	-4.8	-	-4.8	-5.0	-5.0	-	-
Colour, Konica Minolta CM5 (dry)										
L*	93.73	93.33	93.87	93.33	-	93.19	93.84	93.72	-	-
a*	0.51	0.50	0.41	0.43	-	0.48	0.48	0.46	-	-
b*	9.21	10.68	10.72	11.53	-	10.12	9.61	10.15	-	-
RVA										
Peak Viscosity, cP	2331	1994	2456	2247	-	2158	2703	2569	-	-
Minimum viscosity (Trough), cP	1896	1728	2052	1834	-	1841	2154	2127	-	-
Final Viscosity, cP	2526	2128	2582	2425	-	2398	2944	2729	-	-
Peak Time, min	7.00	6.80	6.47	7.00	-	6.87	7.00	6.93	-	-
GLUTEN										
Wet gluten (14% mb), %	32.9	31.1	24.7	24.7	-	61.8	61.1	59.8	-	-
Dry gluten (14% mb), %	11.0	10.5	7.6	7.9	-	8.2	6.4	6.0	-	-
Gluten Index	96	99	97	94	-	14.4	14.0	9.4	-	-
FARINOGRAM										
Water absorption (14% mb), %	60.0	60.0	56.8	57.1	-	61.8	61.1	59.8	-	-
Development time, min	5.3	5.4	5.4	3.5	-	8.2	6.4	6.0	-	-
Stability, min	10.3	11.1	15.2	8.0	-	14.4	14.0	9.4	-	-
Mixing tolerance index, BU	39	33	16	46	-	28	32	46	-	-
EXTENSOGRAM (45 min pull)										
Area, cm ²	139	136	119	81	-	157	147	115	-	-
Maximum height, BU	426	454	549	331	-	496	512	441	-	-
Extensibility, mm	242	224	163	179	-	240	215	194	-	-
ALVEOGRAM										
Strength (S), cm ²	43.1	44.6	41.4	38.1	-	55.4	52.6	41.0	-	-
Stability (P), mm	68	74	86	75	-	73	90	89	-	-
Distensibility (L), mm	159	145	100	110	-	184	138	107	-	-
Configuration ratio (P/L)	0.43	0.51	0.86	0.68	-	0.40	0.65	0.83	-	-
MIXOGRAM										
Peak time, min	2.8	3.3	4.5	3.3	-	3.0	3.4	3.3	-	-
100 g BAKING TEST										
Loaf volume, cm ³	1064	1134	917	940	-	1242	1138	1034	-	-
Evaluation (see page 72)	0	0	0	0	-	0	0	0	-	-

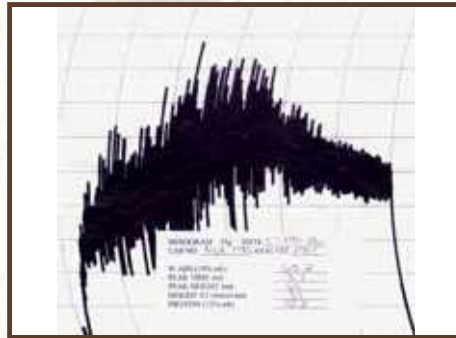
Rheological Graphs Per Production Region

MIXOGRAM

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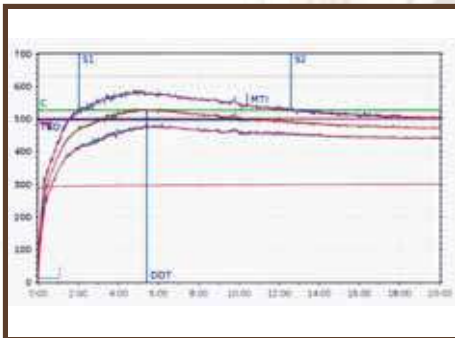


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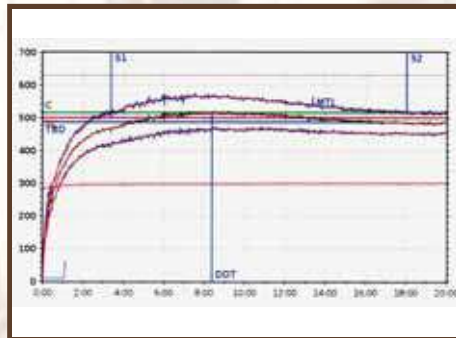


FARINOGRAM

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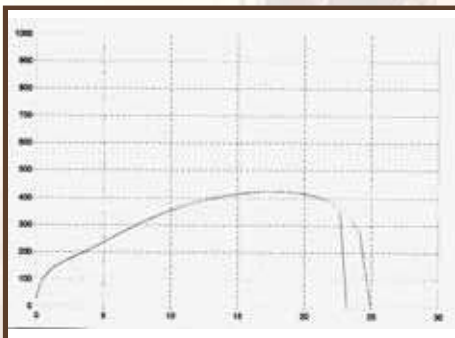


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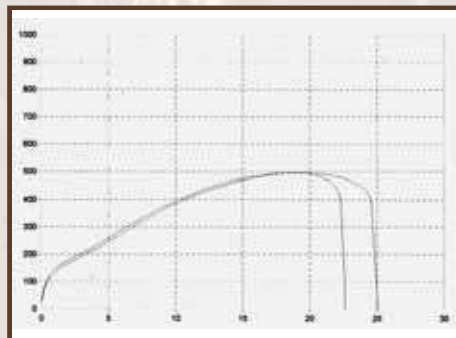


EXTENSOGRAM

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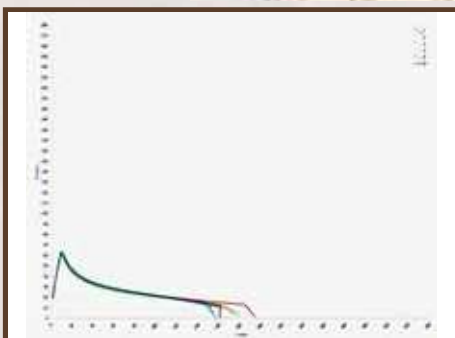


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ALVEOGRAM

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