

South African Quality data per production region

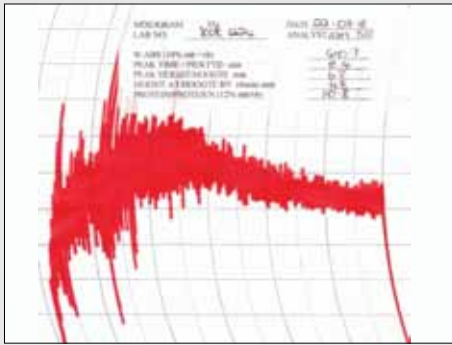
WINTER RAINFALL WHEAT

PRODUCTION REGION	(1) Namakwaland Region				(2) Swartland Western Region							
WHEAT												
	ave	min	max	stdev	ave	min	max	stdev				
Protein (12% mb), %	12.5	11.8	13.5	0.91	14.3	12.5	15.9	0.93				
Falling number, sec	391	355	441	44.68	343	187	388	51.66				
1000 Kernel mass (13% mb), g	38.8	36.8	41.8	2.65	32.5	22.0	36.7	3.79				
Hectolitre mass (dirty), kg/hl	76.3	75.0	77.6	1.30	75.9	72.7	79.5	2.04				
Screenings (<1.8 mm sieve), %	4.77	4.25	5.50	0.65	3.34	1.68	5.14	1.21				
Total damaged kernels, %	4.55	3.30	6.64	1.82	2.20	0.76	7.92	1.86				
Combined deviations, %	10.08	8.25	12.98	2.54	6.40	3.48	13.55	2.71				
Number of samples	3				13							
CULTIVARS												
	SST 015 33.7				SST 056 30.2							
cultivars with highest % occurrence	SST 056 27.3				SST 087 29.5							
	SST 087 17.0				SST 88 21.8							
	SST 88 16.0				SST 015 10.1							
	SST 047 6.0				SST 0127 8.0							
Number of samples	3				13							
MIXOGRAM (Quadromat Junior)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	2.5	2.3	2.8	0.26	2.6	2.3	3.0	0.20				
Tail height (6 min), mm	48	46	49	1.53	49	43	52	2.37				
Number of samples	3				13							
COMPOSITE SAMPLES												
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
Bühler Extraction, %	-	-	-	-	71.6	71.7	72.0	71.1	-	-	70.8	70.7
FLOUR												
Protein (12% mb), %	-	-	-	-	12.0	10.5	12.6	15.0	-	-	13.7	13.4
Ash (db), %	-	-	-	-	0.66	0.68	0.56	0.58	-	-	0.58	0.62
Colour, KJ (wet)	-	-	-	-	-4.0	-3.7	-3.9	-3.7	-	-	-3.5	-3.2
Colour, Konica Minolta CM5 (dry)												
L*	-	-	-	-	94.03	93.70	93.62	93.44	-	-	93.64	93.48
a*	-	-	-	-	0.36	0.30	0.44	0.40	-	-	0.36	0.31
b*	-	-	-	-	9.52	9.86	11.24	11.12	-	-	10.25	9.69
RVA												
Peak Viscosity, cP	-	-	-	-	2270	2400	2297	2096	-	-	2154	2377
Minimum viscosity (Through), cP	-	-	-	-	1478	1676	1581	1490	-	-	1684	1656
Final Viscosity, cP	-	-	-	-	2574	2731	2697	2343	-	-	2355	2704
Peak Time, min	-	-	-	-	7.00	7.00	7.00	7.00	-	-	7.00	7.00
GLUTEN												
Wet gluten (14% mb), %	-	-	-	-	32.5	27.8	34.2	39.9	-	-	36.7	35.4
Dry gluten (14% mb), %	-	-	-	-	11.4	9.4	11.9	13.9	-	-	12.7	12.4
Gluten Index	-	-	-	-	94	87	92	89	-	-	93	93
FARINOGRAM												
Water absorption (14% mb), %	-	-	-	-	62.5	59.4	60.2	62.9	-	-	60.7	61.3
Development time, min	-	-	-	-	5.7	4.2	5.7	7.3	-	-	6.0	6.2
Stability, min	-	-	-	-	7.5	5.2	8.9	9.5	-	-	10.0	9.2
Mixing tolerance index, BU	-	-	-	-	38	53	29	28	-	-	29	31
EXTENSOGRAM (45 min pull)												
Area, cm ²	-	-	-	-	97	72	119	131	-	-	141	117
Maximum height, BU	-	-	-	-	347	291	394	391	-	-	410	365
Extensibility, mm	-	-	-	-	199	169	216	241	-	-	246	231
ALVEOGRAM												
Strength (S), cm ²	-	-	-	-	38.8	31.0	39.8	44.0	-	-	49.4	41.1
Stability (P), mm	-	-	-	-	96	84	73	84	-	-	75	73
Distensibility (L), mm	-	-	-	-	94	93	149	122	-	-	181	152
Configuration ratio (P/L)	-	-	-	-	1.02	0.90	0.49	0.69	-	-	0.41	0.48
MIXOGRAM												
Peak time, min	-	-	-	-	2.1	2.5	2.4	2.3	-	-	2.4	2.4
100g BAKING TEST												
Loaf volume, cm ³	-	-	-	-	1096	981	1177	1209	-	-	1243	1184
Evaluation (see page 77)	-	-	-	-	0	0	0	0	-	-	0	0

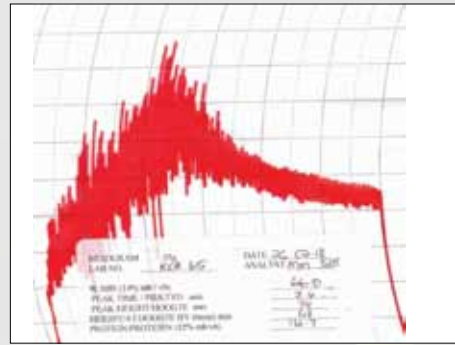
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

1

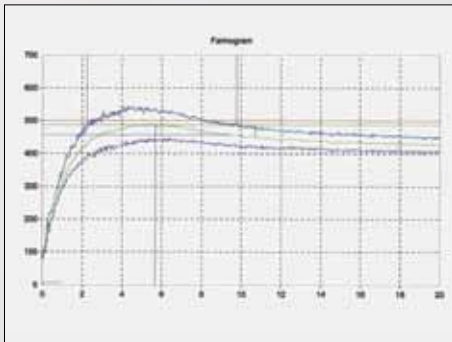


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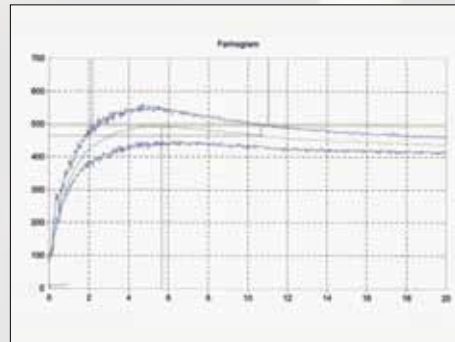


FARINOGRAM

1

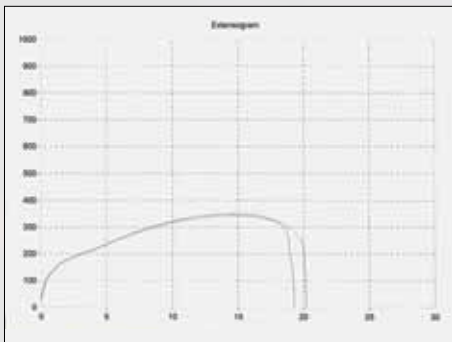


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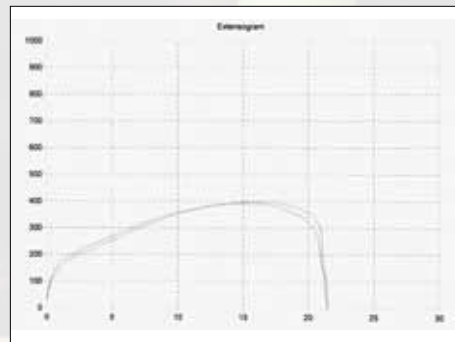


EXTENSOGRAM

1

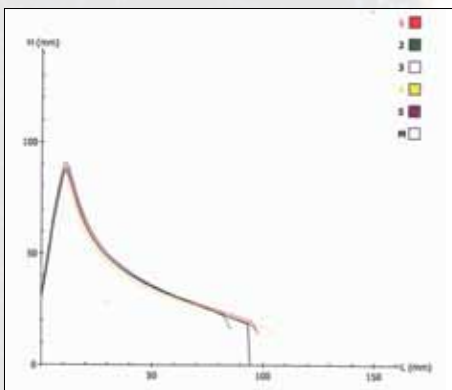


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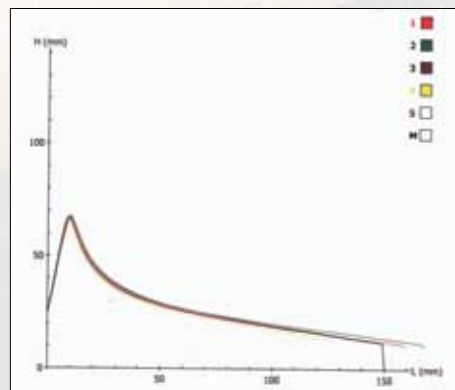


ALVEOGRAM

1



2



South African Quality data per production region

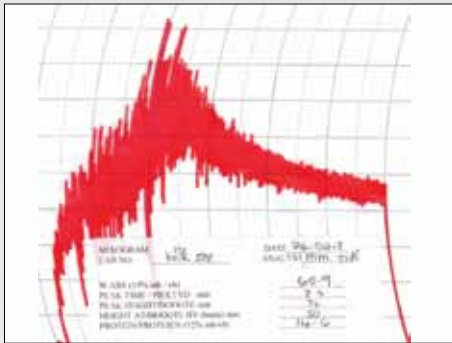
WINTER RAINFALL WHEAT

PRODUCTION REGION	(3) Swartland Central Region				(4) Swartland Eastern Region							
WHEAT												
	ave	min	max	stdev	ave	min	max	stdev				
Protein (12% mb), %	14.6	9.6	16.5	1.20	13.1	10.9	14.1	0.95				
Falling number, sec	392	300	509	36.15	373	291	427	33.69				
1000 Kernel mass (13% mb), g	33.1	29.5	38.4	1.85	34.9	31.6	40.6	2.18				
Hectolitre mass (dirty), kg/hl	78.1	73.9	81.7	1.67	79.7	77.5	81.0	1.11				
Screenings (<1.8 mm sieve), %	2.12	0.30	3.70	0.76	2.06	0.10	3.33	1.02				
Total damaged kernels, %	1.17	0.18	2.58	0.53	0.88	0.48	1.80	0.31				
Combined deviations, %	3.92	1.32	5.40	1.04	3.81	2.29	5.27	0.99				
Number of samples	52				17							
CULTIVARS												
		SST 056	32.0			SST 056	25.2					
cultivars with highest % occurrence		SST 087	22.6			SST 087	22.3					
		SST 88	21.8			SST 88	20.3					
		SST 015	13.4			SST 015	18.4					
		SST 0127	9.6			SST 0127	13.5					
Number of samples	52				17							
MIXOGRAM (Quadromat Junior)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	2.6	2.1	3.4	0.23	2.8	2.3	3.0	0.19				
Tail height (6 min), mm	51	42	56	2.96	49	44	52	2.34				
Number of samples	52				17							
	COMPOSITE SAMPLES											
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
Bühler Extraction, %	70.9	70.6	71.7	70.2	71.1	-	71.7	-	-	72.0	71.7	-
FLOUR												
Protein (12% mb), %	13.3	14.6	14.9	15.4	12.9	-	12.3	-	-	9.7	12.7	-
Ash (db), %	0.60	0.57	0.49	0.55	0.58	-	0.56	-	-	0.56	0.54	-
Colour, KJ (wet)	-3.6	-3.6	-3.5	-3.7	-4.0	-	-4.2	-	-	-4.2	-4.3	-
Colour, Konica Minolta CM5 (dry)												
L*	93.55	93.64	93.70	93.84	93.82	-	93.93	-	-	93.87	94.08	-
a*	0.50	0.42	0.43	0.41	0.40	-	0.36	-	-	0.32	0.36	-
b*	10.43	10.52	10.11	9.99	10.15	-	10.36	-	-	10.71	10.30	-
RVA												
Peak Viscosity, cP	2241	2190	2215	2194	2352	-	2325	-	-	2163	1987	-
Minimum viscosity (Through), cP	1650	1557	1519	1542	1721	-	1750	-	-	1672	1507	-
Final Viscosity, cP	2557	2438	2406	2479	2699	-	2682	-	-	2546	2294	-
Peak Time, min	7.00	7.00	7.00	7.00	7.00	-	7.00	-	-	7.00	7.00	-
GLUTEN												
Wet gluten (14% mb), %	35.9	40.7	41.5	43.4	35.2	-	32.8	-	-	24.9	33.7	-
Dry gluten (14% mb), %	12.5	14.2	14.1	14.7	12.2	-	11.2	-	-	8.6	11.5	-
Gluten Index	94	96	92	92	95	-	97	-	-	92	97	-
FARINOGRAM												
Water absorption (14% mb), %	61.4	62.5	63.2	62.9	61.1	-	60.7	-	-	60.1	60.9	-
Development time, min	6.7	8.2	7.7	8.0	6.9	-	6.5	-	-	4.2	6.5	-
Stability, min	11.0	16.3	12.8	16.6	12.8	-	9.8	-	-	6.5	13.0	-
Mixing tolerance index, BU	28	21	25	16	22	-	32	-	-	41	20	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	150	153	150	163	144	-	144	-	-	75	151	-
Maximum height, BU	435	428	394	402	439	-	443	-	-	336	467	-
Extensibility, mm	248	256	272	289	245	-	238	-	-	159	237	-
ALVEOGRAM												
Strength (S), cm ²	55.0	53.5	56.7	64.7	48.0	-	47.4	-	-	30.9	50.7	-
Stability (P), mm	85	84	80	82	81	-	80	-	-	90	79	-
Distensibility (L), mm	163	157	193	197	141	-	140	-	-	76	168	-
Configuration ratio (P/L)	0.52	0.54	0.41	0.42	0.57	-	0.57	-	-	1.18	0.47	-
MIXOGRAM												
Peak time, min	2.3	2.5	2.3	2.6	2.4	-	2.4	-	-	2.3	2.5	-
100g BAKING TEST												
Loaf volume, cm ³	1200	1242	1319	1304	1235	-	1155	-	-	923	1212	-
Evaluation (see page 77)	00	0	0	0	0	-	0	-	-	0	0	-

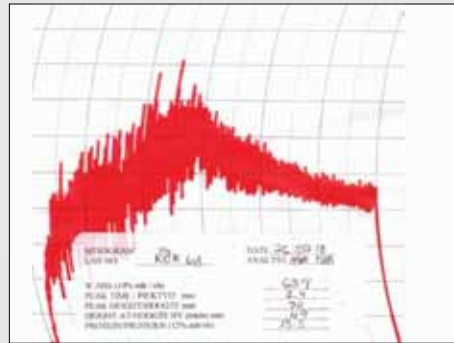
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

3

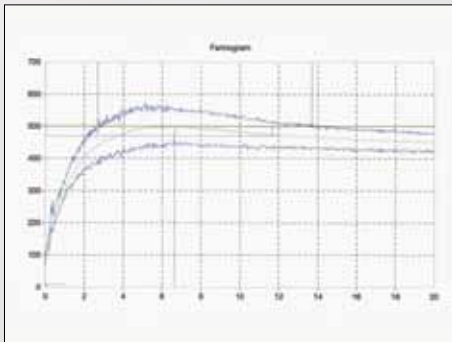


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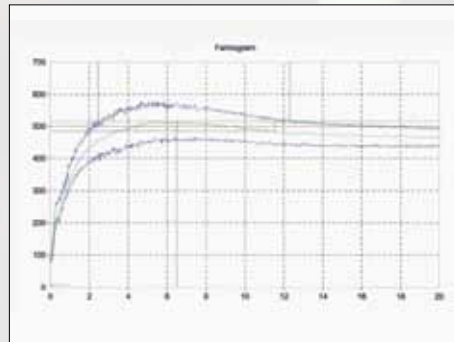


FARINOGRAM

3

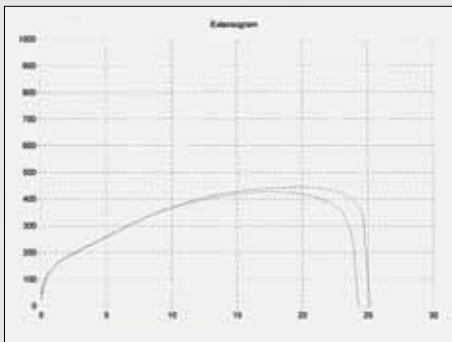


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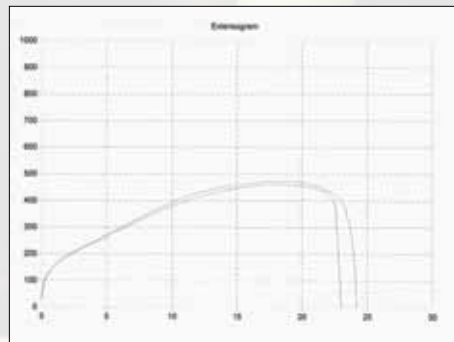


EXTENSOGRAM

3

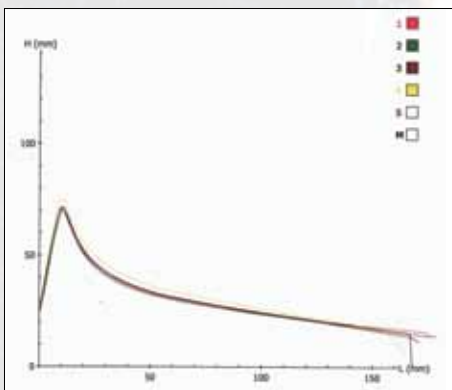


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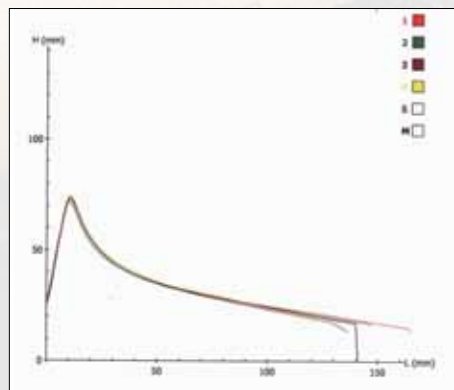


ALVEOGRAM

3



4



South African Quality data per production region

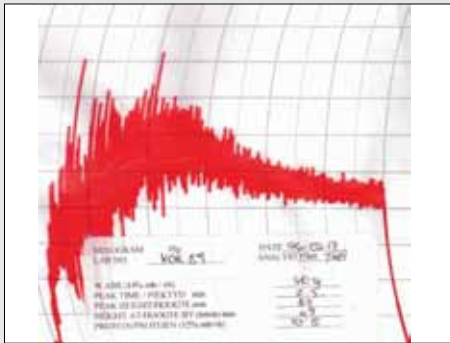
WINTER RAINFALL WHEAT

PRODUCTION REGION	(5) Rûens Western Region				(6) Rûens Eastern Region							
WHEAT												
	ave	min	max	stdev	ave	min	max	stdev				
Protein (12% mb), %	11.9	9.3	14.6	1.27	11.8	9.9	13.6	0.93				
Falling number, sec	361	268	455	39.99	349	316	443	23.47				
1000 Kernel mass (13% mb), g	39.0	32.9	45.2	3.26	40.9	36.4	45.9	2.48				
Hectolitre mass (dirty), kg/hl	80.7	76.0	82.6	1.72	80.2	78.4	82.2	0.85				
Screenings (<1.8 mm sieve), %	0.76	0.05	2.24	0.65	1.50	0.18	3.61	0.92				
Total damaged kernels, %	0.60	0.12	1.20	0.25	0.92	0.14	4.46	0.85				
Combined deviations, %	2.10	0.42	5.03	1.27	3.17	1.78	5.51	1.20				
Number of samples	42				24							
CULTIVARS												
	SST 087				SST 087							
	44.0				42.4							
cultivars with highest % occurrence	SST 056				SST 0127							
	18.5				17.8							
	SST 0127				SST 056							
	17.1				16.3							
	SST 015				SST 015							
	11.7				13.2							
	SST 88				SST 88							
	7.3				9.4							
Number of samples	42				24							
MIXOGRAM (Quadromat Junior)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	2.6	2.2	2.8	0.16	2.6	2.0	3.3	0.31				
Tail height (6 min), mm	49	42	55	2.97	50	43	54	2.94				
Number of samples	42				24							
COMPOSITE SAMPLES												
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
Bühler Extraction, %	70.9	71.3	72.8	73.9	70.2	-	71.3	71.7	72.8	-	71.7	-
FLOUR												
Protein (12% mb), %	11.8	11.2	9.6	8.3	10.0	-	11.9	10.5	9.6	-	10.5	-
Ash (db), %	0.59	0.61	0.60	0.56	0.62	-	0.56	0.59	0.61	-	0.58	-
Colour, KJ (wet)	-4.1	-3.9	-3.9	-4.8	-4.0	-	-4.1	-4.1	-3.9	-	-4.0	-
Colour, Konica Minolta CM5 (dry) L*	93.91	93.73	93.63	94.09	93.62	-	94.03	93.92	93.61	-	93.91	-
a*	0.48	0.52	0.57	0.33	0.55	-	0.43	0.44	0.48	-	0.41	-
b*	10.05	10.24	10.03	10.58	11.19	-	9.76	10.10	10.23	-	10.26	-
RVA												
Peak Viscosity, cP	2335	2098	2370	2354	2331	-	2433	2387	2297	-	2354	-
Minimum viscosity (Through), cP	1706	1626	1849	1858	1734	-	1859	1854	1779	-	1758	-
Final Viscosity, cP	2725	2396	2837	2841	2751	-	2860	2856	2744	-	2804	-
Peak Time, min	7.00	7.00	7.00	7.00	7.00	-	7.00	7.00	7.00	-	7.00	-
GLUTEN												
Wet gluten (14% mb), %	32.8	31.0	26.2	22.0	27.1	-	33.0	28.4	24.5	-	27.2	-
Dry gluten (14% mb), %	11.0	10.4	8.8	7.3	9.2	-	11.2	9.7	8.3	-	9.3	-
Gluten Index	92	92	93	94	88	-	95	94	96	-	96	-
FARINOGRAM												
Water absorption (14% mb), %	61.0	61.2	59.1	57.2	60.7	-	61.2	60.4	59.6	-	59.7	-
Development time, min	5.8	5.2	4.0	2.8	4.0	-	5.5	5.2	3.8	-	4.7	-
Stability, min	9.5	8.5	5.8	4.2	5.9	-	10.0	9.3	5.9	-	8.7	-
Mixing tolerance index, BU	31	33	49	60	40	-	25	29	45	-	30	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	113	101	74	57	74	-	109	91	67	-	89	-
Maximum height, BU	386	351	302	245	294	-	385	338	266	-	329	-
Extensibility, mm	211	205	172	156	172	-	201	191	170	-	191	-
ALVEOGRAM												
Strength (S), cm ²	45.0	37.2	31.5	24.8	31.7	-	43.1	39.4	28.6	-	39.0	-
Stability (P), mm	88	91	77	67	94	-	86	86	89	-	88	-
Distensibility (L), mm	132	96	108	105	81	-	124	119	74	-	111	-
Configuration ratio (P/L)	0.67	0.95	0.71	0.64	1.16	-	0.69	0.72	1.20	-	0.79	-
MIXOGRAM												
Peak time, min	2.5	2.3	2.4	2.5	2.0	-	2.4	2.4	2.3	-	2.3	-
100g BAKING TEST												
Loaf volume, cm ³	1096	1046	963	862	945	-	1093	1056	1004	-	1040	-
Evaluation (see page 77)	0	0	0	0	0	-	0	0	0	-	0	-

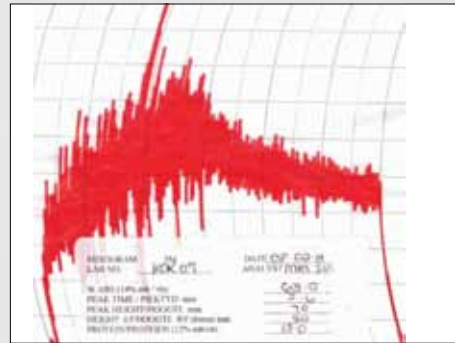
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

5

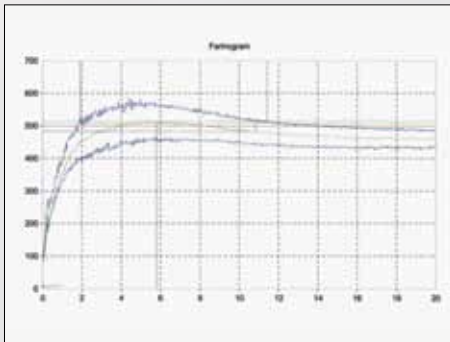


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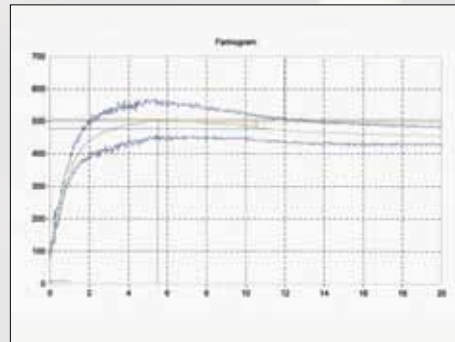


FARINOGRAM

5

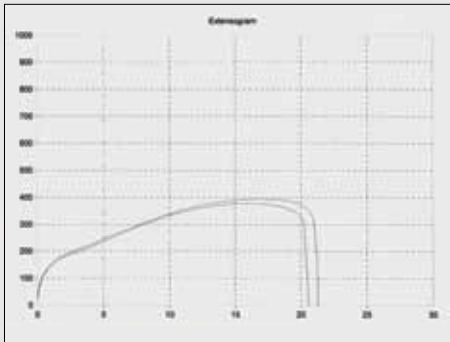


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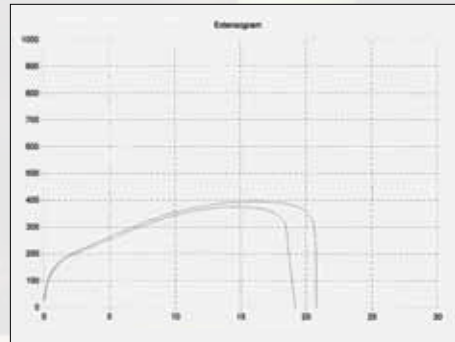


EXTENSOGRAM

5

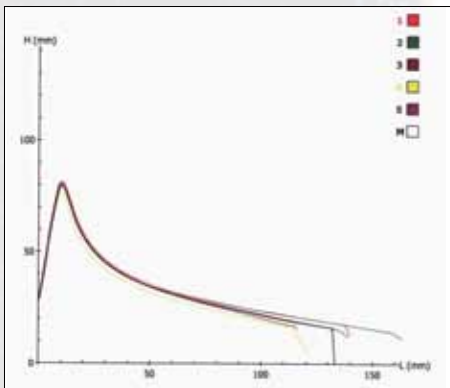


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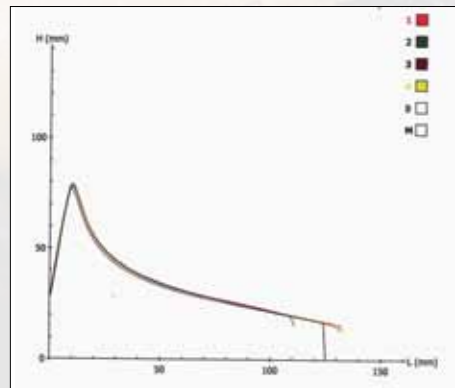


ALVEOGRAM

5



6



South African Quality data per production region

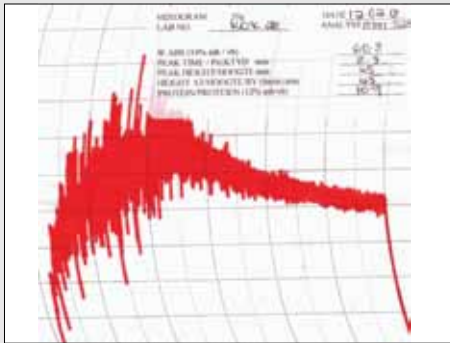
IRRIGATION WHEAT

PRODUCTION REGION	(10) Griqualand West Region				(11) Vaalharts Region							
WHEAT												
Protein (12% mb), %	11.6	9.3	12.7	0.79	11.8	9.9	13.7	0.90				
Falling number, sec	365	300	443	32.21	397	344	472	36.02				
1000 Kernel mass (13% mb), g	40.2	36.1	48.8	2.72	40.5	33.3	45.7	3.69				
Hectolitre mass (dirty), kg/hl	84.8	83.2	86.3	0.91	82.6	80.0	85.3	1.56				
Screenings (<1.8 mm sieve), %	0.73	0.10	1.86	0.48	1.32	0.23	2.19	0.59				
Total damaged kernels, %	0.56	0.12	2.24	0.43	0.36	0.08	0.74	0.20				
Combined deviations, %	1.70	0.47	3.28	0.86	2.63	0.95	3.60	0.83				
Number of samples	30				14							
CULTIVARS												
cultivars with highest % occurrence	PAN 3471 23.8				PAN 3471 39.2							
	SST 875 24.5				SST 884 26.6							
	SST 884 21.4				SST 875 9.4							
	SST 835 9.7				SST 895 8.1							
	BAVIAANS 6.0				SST 835 6.9							
Number of samples	30				14							
MIXOGRAM (Quadromat Junior)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	2.3	1.7	2.8	0.29	2.6	2.2	3.0	0.21				
Tail height (6 min), mm	43	36	50	3.90	46	41	52	2.95				
Number of samples	30				14							
COMPOSITE SAMPLES												
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
Bühler Extraction, %	73.9	73.5	73.4	-	-	-	73.4	74.6	-	-	74.1	-
FLOUR												
Protein (12% mb), %	11.6	10.6	9.8	-	-	-	11.2	10.6	-	-	10.6	-
Ash (db), %	0.55	0.60	0.65	-	-	-	0.61	0.60	-	-	0.63	-
Colour, KJ (wet)	-4.7	-4.8	-4.9	-	-	-	-4.5	-4.7	-	-	-4.6	-
Colour, Konica Minolta CM5 (dry)												
L*	93.93	94.11	94.10	-	-	-	93.97	93.93	-	-	93.99	-
a*	0.52	0.50	0.49	-	-	-	0.44	0.47	-	-	0.47	-
b*	10.24	9.89	10.12	-	-	-	9.76	10.23	-	-	10.04	-
RVA												
Peak Viscosity, cP	2298	2378	2303	-	-	-	2255	2252	-	-	2127	-
Minimum viscosity (Through), cP	1729	1774	1727	-	-	-	1651	1712	-	-	1600	-
Final Viscosity, cP	2561	2672	2589	-	-	-	2418	2544	-	-	2409	-
Peak Time, min	7.00	7.00	7.00	-	-	-	7.00	7.00	-	-	7.00	-
GLUTEN												
Wet gluten (14% mb), %	32.5	30.7	27.8	-	-	-	32.4	30.7	-	-	30.8	-
Dry gluten (14% mb), %	10.8	9.9	8.8	-	-	-	10.5	9.9	-	-	10.1	-
Gluten Index	90	85	90	-	-	-	86	85	-	-	83	-
FARINOGRAM												
Water absorption (14% mb), %	61.3	60.9	59.3	-	-	-	61.3	60.4	-	-	60.7	-
Development time, min	5.0	5.0	4.3	-	-	-	5.5	4.0	-	-	4.3	-
Stability, min	5.5	5.9	6.0	-	-	-	6.1	5.3	-	-	5.4	-
Mixing tolerance index, BU	49	49	44	-	-	-	51	51	-	-	53	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	138	127	69	-	-	-	94	84	-	-	82	-
Maximum height, BU	504	469	322	-	-	-	381	322	-	-	306	-
Extensibility, mm	205	199	154	-	-	-	176	191	-	-	189	-
ALVEOGRAM												
Strength (S), cm ²	36.5	30.3	30.4	-	-	-	37.3	33.5	-	-	31.8	-
Stability (P), mm	79	86	75	-	-	-	90	75	-	-	81	-
Distensibility (L), mm	115	77	101	-	-	-	98	115	-	-	95	-
Configuration ratio (P/L)	0.69	1.12	0.74	-	-	-	0.92	0.65	-	-	0.85	-
MIXOGRAM												
Peak time, min	2.2	2.4	2.6	-	-	-	2.5	2.4	-	-	2.3	-
100g BAKING TEST												
Loaf volume, cm ³	1193	1104	1004	-	-	-	1071	1085	-	-	1086	-
Evaluation (see page 77)	0	0	0	-	-	-	0	0	-	-	0	-

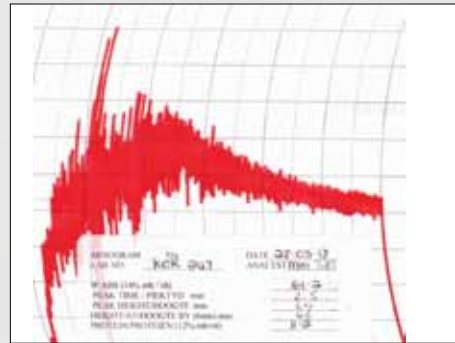
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

10

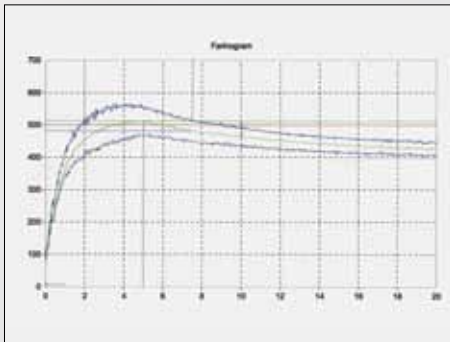


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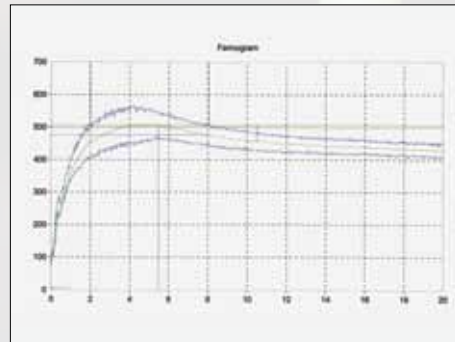


FARINOGRAM

10

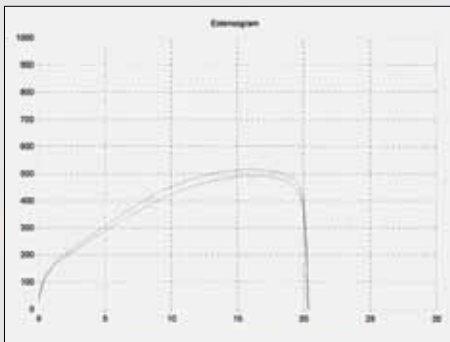


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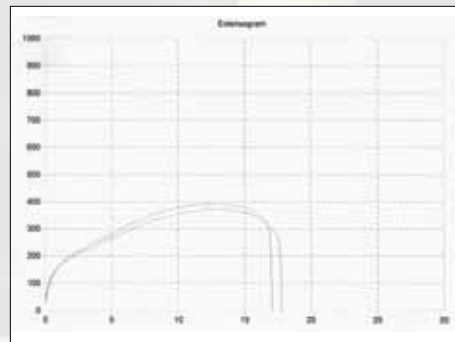


EXTENSOGRAM

10

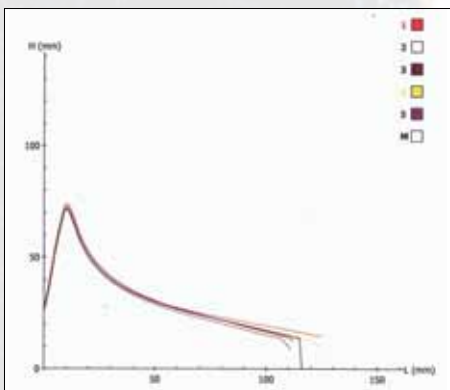


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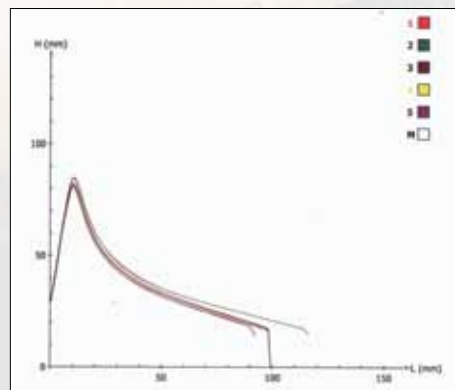


ALVEOGRAM

10



11



South African Quality data per production region

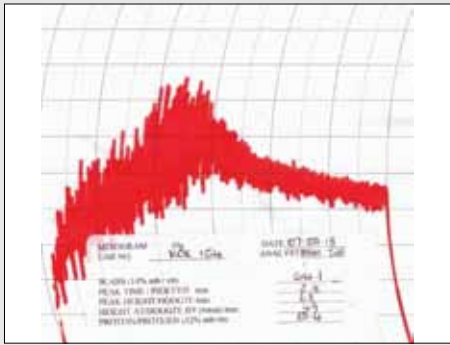
IRRIGATION WHEAT

PRODUCTION REGION	(12) North West Western Region				(14) North West Southern Region							
WHEAT												
	ave	min	max	stdev	ave	min	max	stdev				
Protein (12% mb), %	12.6	11.9	13.6	0.86	13.0	12.6	13.6	0.55				
Falling number, sec	403	378	435	24.35	432	412	455	21.66				
1000 Kernel mass (13% mb), g	37.7	31.0	43.2	6.37	39.5	38.6	40.1	0.79				
Hectolitre mass (dirty), kg/hl	81.0	80.9	81.1	0.10	82.3	81.7	82.8	0.55				
Screenings (<1.8 mm sieve), %	0.85	0.06	1.73	0.92	1.49	1.41	1.59	0.09				
Total damaged kernels, %	0.27	0.18	0.36	0.08	0.21	0.18	0.24	0.03				
Combined deviations, %	1.35	0.24	2.43	1.24	1.93	1.83	1.98	0.08				
Number of samples	4				3							
CULTIVARS												
		SST 843	41.5			SST 843	35.7					
cultivars with highest % occurrence		SST 884	34.8			SST 875	31.0					
		SST 875	18.5			PAN 3497	14.0					
		PAN 3471	4.0			SST 884	14.0					
		KARIEGA	1.3			SST 835	5.3					
Number of samples	4				3							
MIXOGRAM (Quadromat Junior)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	3.3	2.3	5.5	1.47	4.1	3.9	4.3	0.21				
Tail height (6 min), mm	49	45	55	4.73	56	55	57	1.15				
Number of samples	4				3							
	COMPOSITE SAMPLES											
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
Bühler Extraction, %	73.7	74.9	-	-	-	-	74.8	-	-	-	-	-
FLOUR												
Protein (12% mb), %	12.9	11.2	-	-	-	-	12.1	-	-	-	-	-
Ash (db), %	0.61	0.60	-	-	-	-	0.63	-	-	-	-	-
Colour, KJ (wet)	-4.6	-4.3	-	-	-	-	-4.1	-	-	-	-	-
Colour, Konica Minolta CM5 (dry) L*	93.98	94.16	-	-	-	-	93.67	-	-	-	-	-
a*	0.48	0.39	-	-	-	-	0.45	-	-	-	-	-
b*	9.14	8.41	-	-	-	-	8.92	-	-	-	-	-
RVA												
Peak Viscosity, cP	2606	2378	-	-	-	-	2471	-	-	-	-	-
Minimum viscosity (Through), cP	1949	1654	-	-	-	-	1723	-	-	-	-	-
Final Viscosity, cP	2899	2657	-	-	-	-	2653	-	-	-	-	-
Peak Time, min	7.00	7.00	-	-	-	-	7.00	-	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	32.1	31.4	-	-	-	-	31.0	-	-	-	-	-
Dry gluten (14% mb), %	11.6	10.7	-	-	-	-	10.7	-	-	-	-	-
Gluten Index	100	86	-	-	-	-	98	-	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	60.1	60.0	-	-	-	-	59.8	-	-	-	-	-
Development time, min	9.9	4.5	-	-	-	-	10.0	-	-	-	-	-
Stability, min	17.5	5.2	-	-	-	-	15.0	-	-	-	-	-
Mixing tolerance index, BU	15	58	-	-	-	-	26	-	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	178	100	-	-	-	-	141	-	-	-	-	-
Maximum height, BU	557	362	-	-	-	-	531	-	-	-	-	-
Extensibility, mm	235	198	-	-	-	-	201	-	-	-	-	-
ALVEOGRAM												
Strength (S), cm ²	63.0	38.3	-	-	-	-	52.6	-	-	-	-	-
Stability (P), mm	93	71	-	-	-	-	103	-	-	-	-	-
Distensibility (L), mm	129	150	-	-	-	-	97	-	-	-	-	-
Configuration ratio (P/L)	0.72	0.47	-	-	-	-	1.06	-	-	-	-	-
MIXOGRAM												
Peak time, min	4.0	2.2	-	-	-	-	3.9	-	-	-	-	-
100g BAKING TEST												
Loaf volume, cm ³	1222	1196	-	-	-	-	1129	-	-	-	-	-
Evaluation (see page 77)	0	0	-	-	-	-	0	-	-	-	-	-

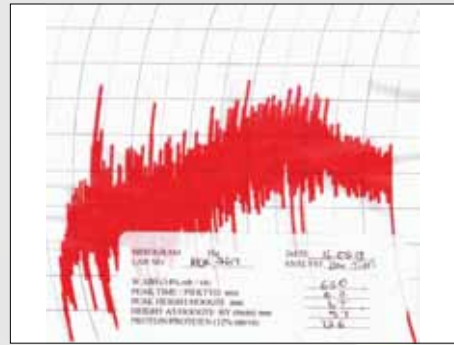
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

12

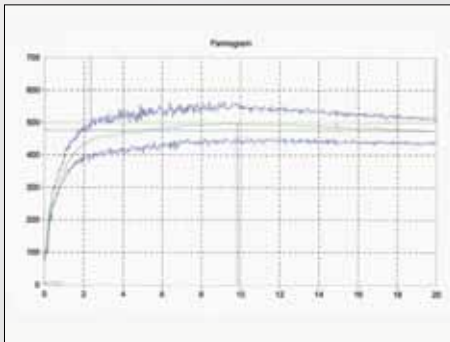


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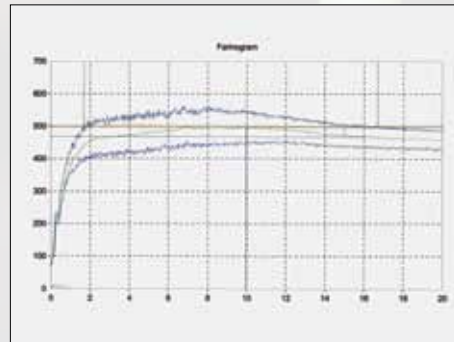


FARINOGRAM

12

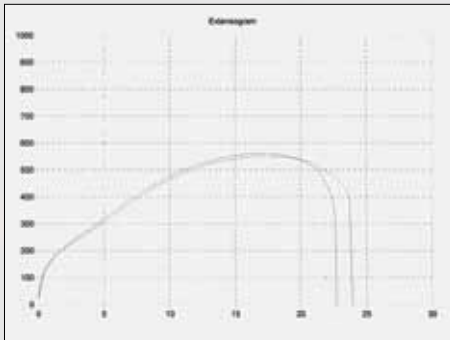


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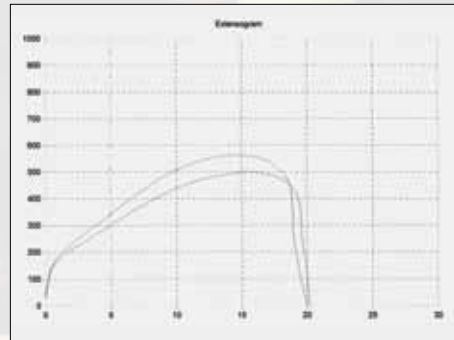


EXTENSOGRAM

12

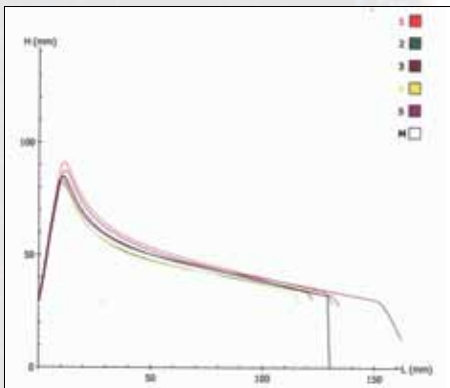


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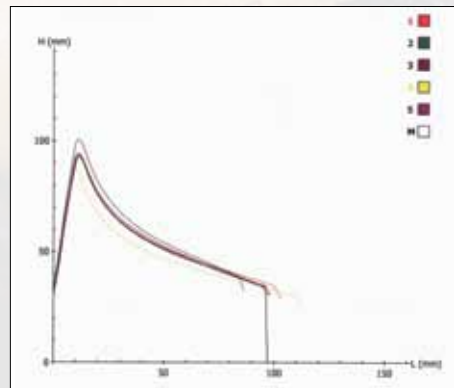


ALVEOGRAM

12



14



South African Quality data per production region

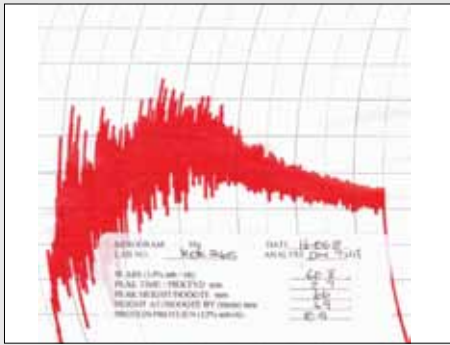
IRRIGATION WHEAT

PRODUCTION REGION	(15) North West South-Eastern Region				(16) North West Central-Eastern Region							
WHEAT												
	ave	min	max	stdev	ave	min	max	stdev				
Protein (12% mb), %	12.4	11.5	13.8	0.79	11.9	-	-	-				
Falling number, sec	455	403	579	59.81	380	-	-	-				
1000 Kernel mass (13% mb), g	41.7	34.5	45.3	3.52	41.0	-	-	-				
Hectolitre mass (dirty), kg/hl	82.2	81.5	82.9	0.56	81.8	-	-	-				
Screenings (<1.8 mm sieve), %	1.01	0.43	1.99	0.55	1.19	-	-	-				
Total damaged kernels, %	0.23	0.12	0.30	0.07	0.32	-	-	-				
Combined deviations, %	1.35	0.61	2.55	0.68	1.73	-	-	-				
Number of samples	7				1							
CULTIVARS												
		PAN 3471	34.6			SST 843	56.0					
cultivars with highest % occurrence		PAN 3400	18.6			SST 875	44.0					
		SST 884	17.3			-	-					
		PAN 3497	13.7			-	-					
		SST 347	6.0			-	-					
Number of samples	7				1							
MIXOGRAM (Quadromat Junior)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	2.9	2.5	3.4	0.31	2.8	-	-	-				
Tail height (6 min), mm	49	46	52	1.86	47	-	-	-				
Number of samples	7				1							
	COMPOSITE SAMPLES											
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
Bühler Extraction, %	74.7	75.1	-	-	-	-	-	74.6	-	-	-	-
FLOUR												
Protein (12% mb), %	11.9	10.6	-	-	-	-	-	10.9	-	-	-	-
Ash (db), %	0.62	0.64	-	-	-	-	-	0.67	-	-	-	-
Colour, KJ (wet)	-4.3	-4.3	-	-	-	-	-	-4.0	-	-	-	-
Colour, Konica Minolta CM5 (dry)												
L*	93.56	93.81	-	-	-	-	-	93.73	-	-	-	-
a*	0.46	0.44	-	-	-	-	-	0.44	-	-	-	-
b*	10.03	10.12	-	-	-	-	-	9.97	-	-	-	-
RVA												
Peak Viscosity, cP	2431	2330	-	-	-	-	-	2359	-	-	-	-
Minimum viscosity (Through), cP	1791	1716	-	-	-	-	-	1770	-	-	-	-
Final Viscosity, cP	2606	2574	-	-	-	-	-	2539	-	-	-	-
Peak Time, min	7.00	7.00	-	-	-	-	-	7.00	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	31.8	29.1	-	-	-	-	-	29.9	-	-	-	-
Dry gluten (14% mb), %	10.7	9.6	-	-	-	-	-	10.0	-	-	-	-
Gluten Index	94	97	-	-	-	-	-	93	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	61.4	60.6	-	-	-	-	-	59.4	-	-	-	-
Development time, min	5.3	5.2	-	-	-	-	-	5.7	-	-	-	-
Stability, min	6.1	7.2	-	-	-	-	-	6.5	-	-	-	-
Mixing tolerance index, BU	47	43	-	-	-	-	-	52	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	97	99	-	-	-	-	-	97	-	-	-	-
Maximum height, BU	365	374	-	-	-	-	-	380	-	-	-	-
Extensibility, mm	191	189	-	-	-	-	-	184	-	-	-	-
ALVEOGRAM												
Strength (S), cm ²	41.7	37.3	-	-	-	-	-	34.9	-	-	-	-
Stability (P), mm	83	85	-	-	-	-	-	76	-	-	-	-
Distensibility (L), mm	120	101	-	-	-	-	-	110	-	-	-	-
Configuration ratio (P/L)	0.69	0.84	-	-	-	-	-	0.69	-	-	-	-
MIXOGRAM												
Peak time, min	2.6	2.7	-	-	-	-	-	2.7	-	-	-	-
100g BAKING TEST												
Loaf volume, cm ³	1156	1152	-	-	-	-	-	1116	-	-	-	-
Evaluation (see page 77)	0	0	-	-	-	-	-	0	-	-	-	-

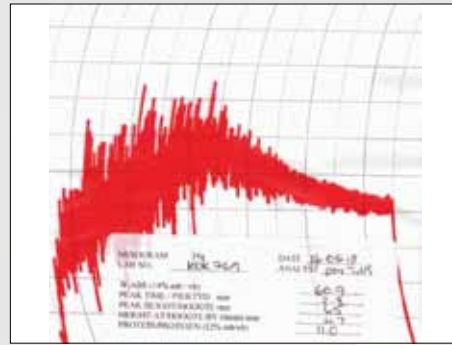
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

15

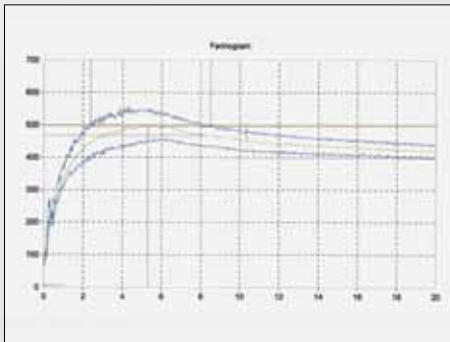


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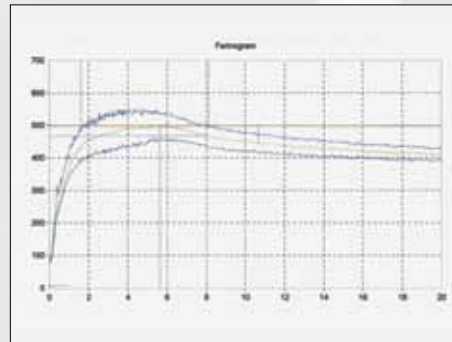


FARINOGRAM

15

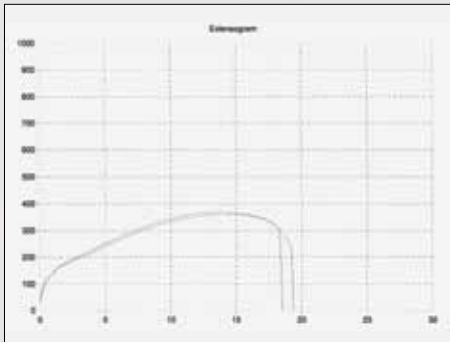


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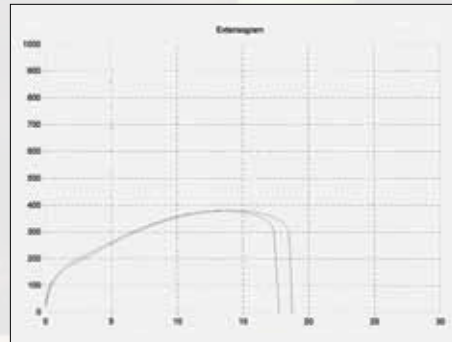


EXTENSOGRAM

15

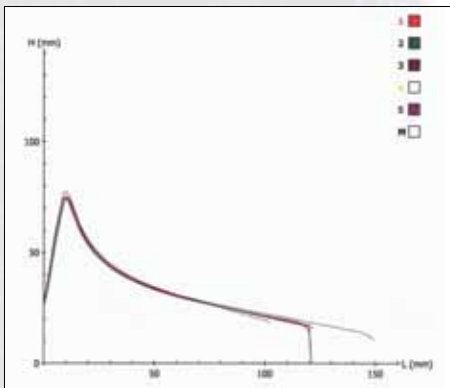


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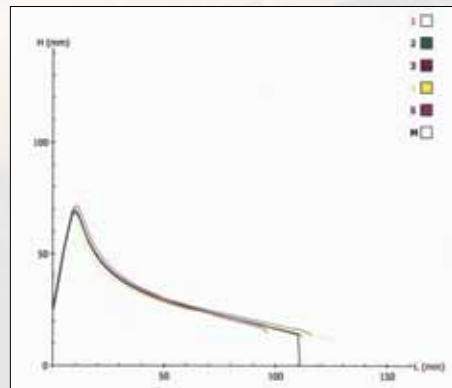


ALVEOGRAM

15



16



South African Quality data per production region

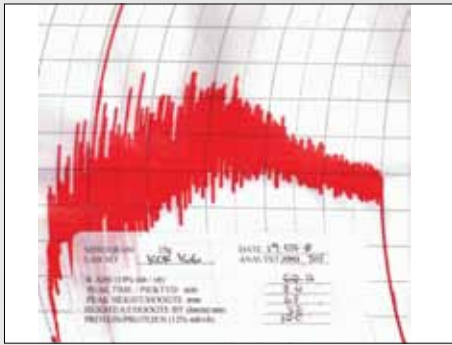
IRRIGATION WHEAT

PRODUCTION REGION	(17) North West Central-Northern Region (Ottosdal)				(18) North West Central Region (Ventersdorp)							
WHEAT												
	ave	min	max	stdev	ave	min	max	stdev				
Protein (12% mb), %	12.9	11.9	13.9	0.82	12.2	-	-	-				
Falling number, sec	378	339	395	26.36	393	-	-	-				
1000 Kernel mass (13% mb), g	36.9	34.9	38.2	1.44	39.3	-	-	-				
Hectolitre mass (dirty), kg/hl	81.9	81.1	82.3	0.53	81.5	-	-	-				
Screenings (<1.8 mm sieve), %	1.83	0.53	3.34	1.49	2.17	-	-	-				
Total damaged kernels, %	0.37	0.14	0.58	0.24	0.36	-	-	-				
Combined deviations, %	2.78	1.09	4.88	1.93	2.95	-	-	-				
Number of samples	4				1							
CULTIVARS												
		SST 843	68.0			PAN 3471	57.0					
cultivars with highest % occurrence		SST 884	17.3			SST 884	25.0					
		SST 875	6.0			PAN 3400	18.0					
		SST 835	4.8			-	-					
		PAN 3471	4.0			-	-					
Number of samples	4				1							
MIXOGRAM (Quadromat Junior)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	3.3	2.5	3.8	0.55	3.0	-	-	-				
Tail height (6 min), mm	51	46	53	3.37	48	-	-	-				
Number of samples	4				1							
	COMPOSITE SAMPLES											
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
Bühler Extraction, %	71.9	-	-	71.4	-	-	73.8	-	-	-	-	-
FLOUR												
Protein (12% mb), %	12.4	-	-	10.5	-	-	11.2	-	-	-	-	-
Ash (db), %	0.63	-	-	0.66	-	-	0.58	-	-	-	-	-
Colour, KJ (wet)	-4.5	-	-	-3.9	-	-	-4.1	-	-	-	-	-
Colour, Konica Minolta CM5 (dry) L*	94.08	-	-	93.63	-	-	94.01	-	-	-	-	-
a*	0.41	-	-	0.44	-	-	0.33	-	-	-	-	-
b*	8.94	-	-	9.56	-	-	8.48	-	-	-	-	-
RVA												
Peak Viscosity, cP	2368	-	-	2314	-	-	2429	-	-	-	-	-
Minimum viscosity (Through), cP	1663	-	-	1679	-	-	1778	-	-	-	-	-
Final Viscosity, cP	2602	-	-	2578	-	-	2622	-	-	-	-	-
Peak Time, min	7.00	-	-	7.00	-	-	7.00	-	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	31.8	-	-	30.0	-	-	30.8	-	-	-	-	-
Dry gluten (14% mb), %	11.1	-	-	9.8	-	-	10.4	-	-	-	-	-
Gluten Index	98	-	-	88	-	-	96	-	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	62.1	-	-	61.9	-	-	60.0	-	-	-	-	-
Development time, min	7.9	-	-	4.3	-	-	6.5	-	-	-	-	-
Stability, min	10.5	-	-	4.6	-	-	8.5	-	-	-	-	-
Mixing tolerance index, BU	30	-	-	58	-	-	39	-	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	134	-	-	76	-	-	118	-	-	-	-	-
Maximum height, BU	484	-	-	317	-	-	461	-	-	-	-	-
Extensibility, mm	202	-	-	169	-	-	192	-	-	-	-	-
ALVEOGRAM												
Strength (S), cm ²	54.9	-	-	33.2	-	-	41.9	-	-	-	-	-
Stability (P), mm	102	-	-	91	-	-	85	-	-	-	-	-
Distensibility (L), mm	107	-	-	91	-	-	104	-	-	-	-	-
Configuration ratio (P/L)	0.95	-	-	1.00	-	-	0.82	-	-	-	-	-
MIXOGRAM												
Peak time, min	3.2	-	-	2.3	-	-	3.1	-	-	-	-	-
100g BAKING TEST												
Loaf volume, cm ³	1208	-	-	1025	-	-	1079	-	-	-	-	-
Evaluation (see page 77)	0	-	-	0	-	-	0	-	-	-	-	-

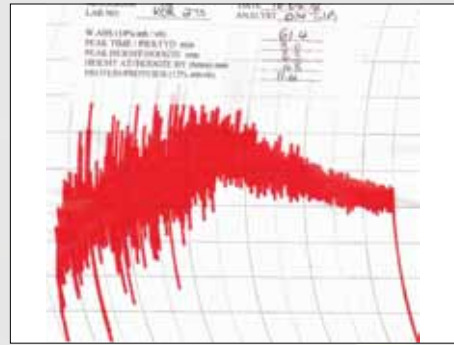
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

17

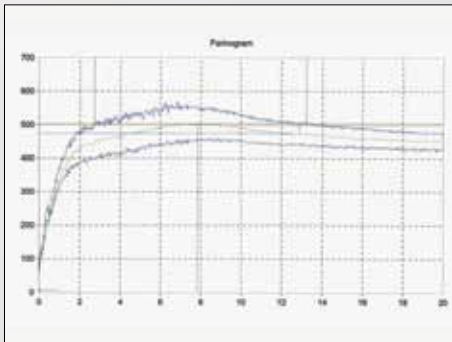


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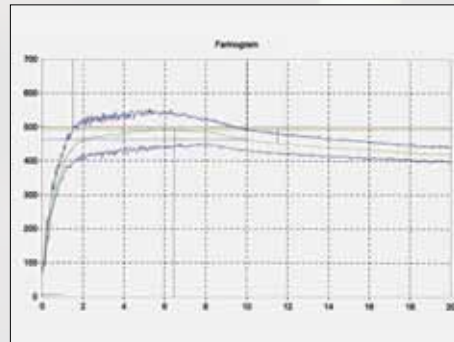


FARINOGRAM

17

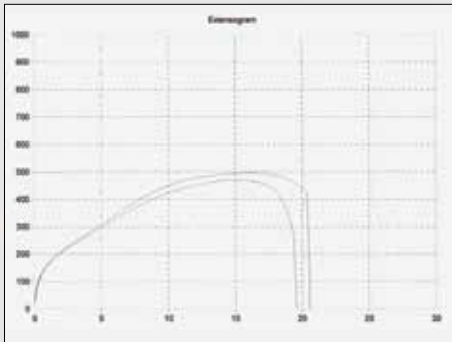


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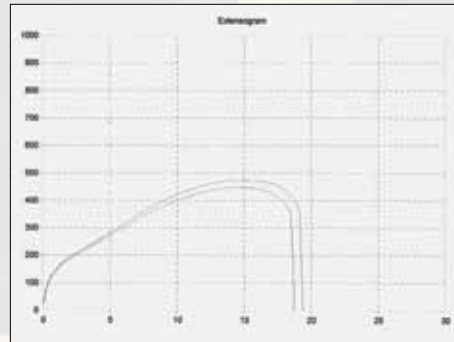


EXTENSOGRAM

17

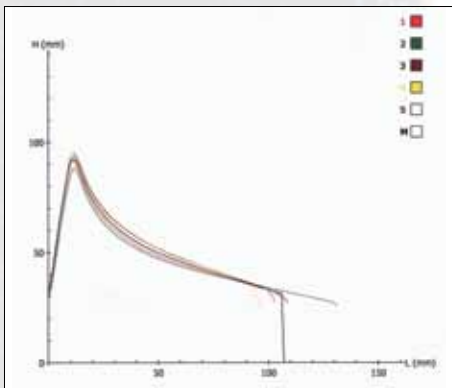


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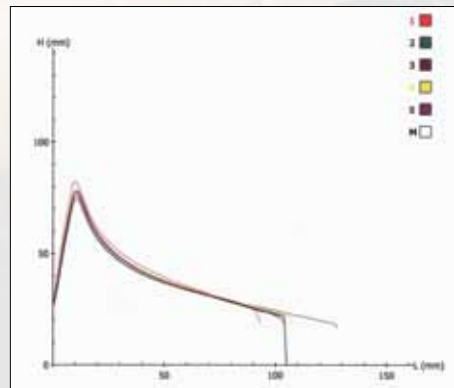


ALVEOGRAM

17



18



South African Quality data per production region

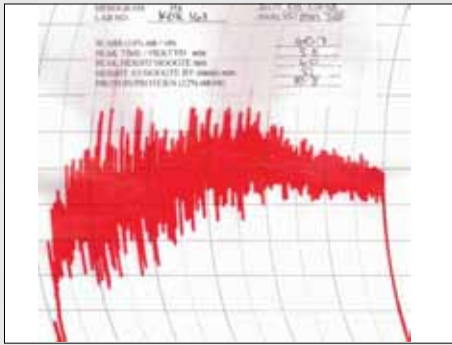
IRRIGATION WHEAT

PRODUCTION REGION	(19) North West Central Region (Lichtenburg)				(20) North West Eastern Region							
WHEAT												
	ave	min	max	stdev	ave	min	max	stdev				
Protein (12% mb), %	11.7	9.6	13.5	1.31	11.7	10.7	13.0	0.75				
Falling number, sec	382	331	426	31.00	372	330	434	36.39				
1000 Kernel mass (13% mb), g	38.7	32.7	42.5	3.02	41.2	38.5	47.2	2.88				
Hectolitre mass (dirty), kg/hl	81.8	80.9	82.5	0.51	82.5	78.9	85.6	1.89				
Screenings (<1.8 mm sieve), %	0.90	0.11	1.85	0.70	1.28	0.83	1.97	0.44				
Total damaged kernels, %	0.42	0.24	1.16	0.26	0.65	0.32	0.84	0.15				
Combined deviations, %	1.56	0.52	2.59	0.72	2.51	1.95	3.24	0.43				
Number of samples	11				8							
CULTIVARS												
		SST 843	43.2			SST 875	27.0					
cultivars with highest % occurrence		SST 884	26.5			DUZI	20.5					
		SST 875	13.8			SST 843	15.9					
		SST 835	5.1			SST 884	10.3					
		PAN 3471	3.8			OLIFANTS	6.3					
Number of samples	11				8							
MIXOGRAM (Quadromat Junior)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	3.6	2.1	4.6	0.81	2.9	2.3	4.7	0.76				
Tail height (6 min), mm	49	42	55	4.38	47	42	57	4.57				
Number of samples	11				8							
	COMPOSITE SAMPLES											
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
Bühler Extraction, %	73.6	72.9	73.6	74.2	-	-	75.1	75.5	74.3	-	-	-
FLOUR												
Protein (12% mb), %	12.6	10.8	9.9	9.2	-	-	11.8	10.5	9.6	-	-	-
Ash (db), %	0.57	0.60	0.58	0.54	-	-	0.61	0.59	0.63	-	-	-
Colour, KJ (wet)	-4.1	-4.2	-4.5	-4.5	-	-	-3.9	-4.4	-4.2	-	-	-
Colour, Konica Minolta CM5 (dry) L*	93.71	93.84	94.18	94.05	-	-	93.59	93.70	93.76	-	-	-
a*	0.46	0.43	0.42	0.38	-	-	0.33	0.46	0.42	-	-	-
b*	9.00	9.36	9.81	9.58	-	-	8.36	9.90	9.68	-	-	-
RVA												
Peak Viscosity, cP	2460	2298	2474	2454	-	-	2227	2435	2517	-	-	-
Minimum viscosity (Through), cP	1743	1676	1789	1794	-	-	1701	1864	1909	-	-	-
Final Viscosity, cP	2705	2588	2847	2849	-	-	2435	2783	2797	-	-	-
Peak Time, min	7.00	7.00	7.00	7.00	-	-	7.00	7.00	7.00	-	-	-
GLUTEN												
Wet gluten (14% mb), %	32.1	28.3	27.2	21.8	-	-	31.0	29.4	25.8	-	-	-
Dry gluten (14% mb), %	11.4	9.7	8.9	7.5	-	-	10.9	9.5	8.7	-	-	-
Gluten Index	99	96	94	100	-	-	96	86	90	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	61.4	60.6	59.2	57.0	-	-	60.9	59.1	58.1	-	-	-
Development time, min	10.0	5.0	4.5	5.8	-	-	6.5	4.0	3.7	-	-	-
Stability, min	14.4	6.6	5.6	10.3	-	-	7.5	4.8	5.4	-	-	-
Mixing tolerance index, BU	27	46	55	29	-	-	41	56	48	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	152	106	85	111	-	-	133	76	90	-	-	-
Maximum height, BU	513	411	353	466	-	-	444	291	354	-	-	-
Extensibility, mm	219	190	171	180	-	-	220	188	184	-	-	-
ALVEOGRAM												
Strength (S), cm ²	60.4	34.6	35.5	39.3	-	-	45.1	30.7	30.7	-	-	-
Stability (P), mm	108	91	76	84	-	-	77	68	75	-	-	-
Distensibility (L), mm	106	82	121	101	-	-	135	119	96	-	-	-
Configuration ratio (P/L)	1.02	1.11	0.63	0.83	-	-	0.57	0.57	0.78	-	-	-
MIXOGRAM												
Peak time, min	3.6	2.7	2.6	3.4	-	-	2.9	2.4	2.9	-	-	-
100g BAKING TEST												
Loaf volume, cm ³	1203	1197	1023	1006	-	-	1207	1099	993	-	-	-
Evaluation (see page 77)	0	0	0	0	-	-	0	0	0	-	-	-

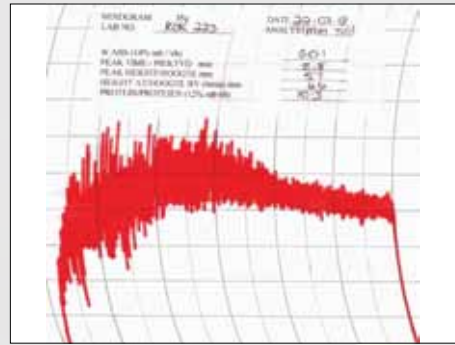
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

19

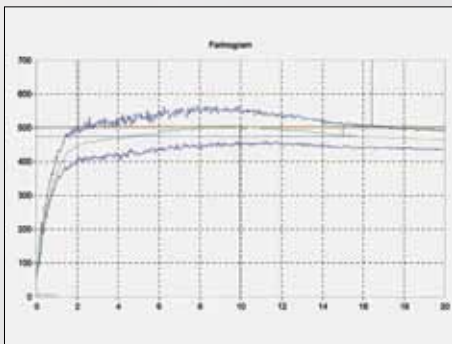


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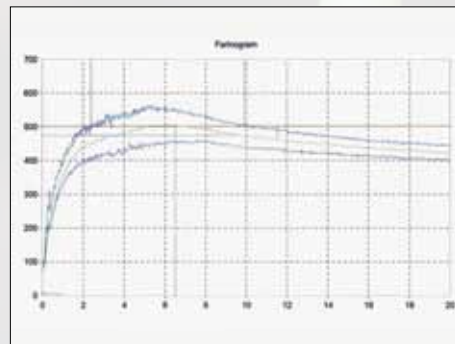


FARINOGRAM

19

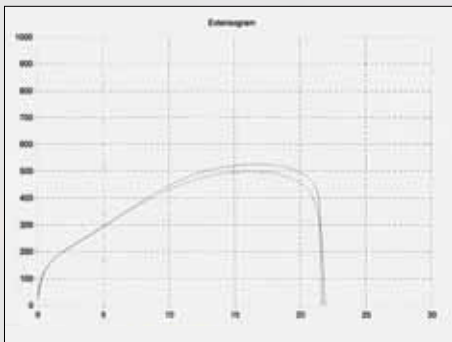


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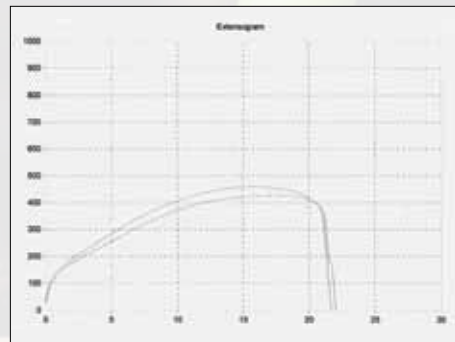


EXTENSOGRAM

19

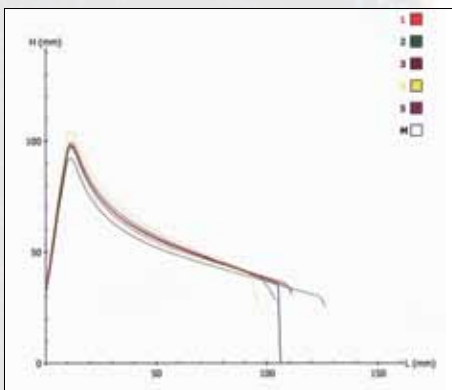


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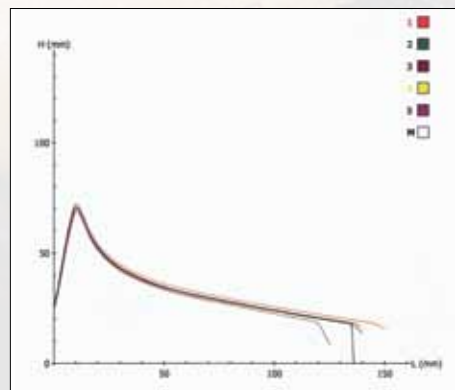


ALVEOGRAM

19



20



South African Quality data per production region

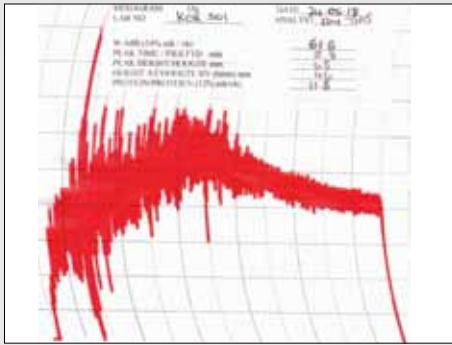
SUMMER RAINFALL AND IRRIGATION WHEAT

PRODUCTION REGION	(21) Free State North-Western Region (Viljoenskroon)				(22) Free State North-Western Region (Bothaville)							
WHEAT												
	ave	min	max	stdev	ave	min	max	stdev				
Protein (12% mb), %	12.5	-	-	-	11.6	10.4	12.9	1.25				
Falling number, sec	297	-	-	-	352	320	395	38.84				
1000 Kernel mass (13% mb), g	39.2	-	-	-	39.9	32.8	44.4	6.20				
Hectolitre mass (dirty), kg/hl	81.9	-	-	-	80.0	79.7	80.3	0.31				
Screenings (<1.8 mm sieve), %	1.58	-	-	-	1.03	0.98	1.08	0.05				
Total damaged kernels, %	0.40	-	-	-	0.59	0.32	0.82	0.25				
Combined deviations, %	2.12	-	-	-	1.75	1.56	1.92	0.18				
Number of samples	1				3							
CULTIVARS												
		SST 884	72.0			SST 387	55.0					
cultivars with highest % occurrence		PAN 3471	28.0			BAVIAANS	11.3					
		-	-			SST 884	10.3					
		-	-			SST 875	9.3					
		-	-			PAN 3471	7.0					
Number of samples	1				3							
MIXOGRAM (Quadromat Junior)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	2.8	-	-	-	3.0	2.8	3.1	0.17				
Tail height (6 min), mm	46	-	-	-	48	47	50	1.53				
Number of samples	1				3							
	COMPOSITE SAMPLES											
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
Bühler Extraction, %	74.8	-	-	-	-	-	73.2	76.4	77.7	-	-	-
FLOUR												
Protein (12% mb), %	11.3	-	-	-	-	-	11.7	10.6	9.6	-	-	-
Ash (db), %	0.61	-	-	-	-	-	0.61	0.58	0.57	-	-	-
Colour, KJ (wet)	-3.6	-	-	-	-	-	-4.0	-4.2	-4.2	-	-	-
Colour, Konica Minolta CM5 (dry)												
L*	93.53	-	-	-	-	-	93.91	93.90	94.06	-	-	-
a*	0.38	-	-	-	-	-	0.38	0.41	0.31	-	-	-
b*	9.05	-	-	-	-	-	10.20	9.81	9.99	-	-	-
RVA												
Peak Viscosity, cP	2018	-	-	-	-	-	2244	2248	2358	-	-	-
Minimum viscosity (Through), cP	1685	-	-	-	-	-	1911	1840	1765	-	-	-
Final Viscosity, cP	2126	-	-	-	-	-	2335	2458	2619	-	-	-
Peak Time, min	6.93	-	-	-	-	-	6.80	7.00	7.00	-	-	-
GLUTEN												
Wet gluten (14% mb), %	31.7	-	-	-	-	-	32.3	30.5	25.6	-	-	-
Dry gluten (14% mb), %	10.5	-	-	-	-	-	10.9	10.4	8.5	-	-	-
Gluten Index	94	-	-	-	-	-	97	97	99	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	59.6	-	-	-	-	-	58.9	59.3	58.3	-	-	-
Development time, min	3.8	-	-	-	-	-	6.2	5.0	5.0	-	-	-
Stability, min	5.7	-	-	-	-	-	8.8	5.7	6.2	-	-	-
Mixing tolerance index, BU	55	-	-	-	-	-	37	53	52	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	96	-	-	-	-	-	115	87	80	-	-	-
Maximum height, BU	341	-	-	-	-	-	401	305	329	-	-	-
Extensibility, mm	206	-	-	-	-	-	207	203	176	-	-	-
ALVEOGRAM												
Strength (S), cm ²	35.2	-	-	-	-	-	42.7	37.0	33.3	-	-	-
Stability (P), mm	71	-	-	-	-	-	67	66	70	-	-	-
Distensibility (L), mm	126	-	-	-	-	-	167	145	118	-	-	-
Configuration ratio (P/L)	0.56	-	-	-	-	-	0.40	0.46	0.59	-	-	-
MIXOGRAM												
Peak time, min	2.6	-	-	-	-	-	2.9	2.7	2.9	-	-	-
100g BAKING TEST												
Loaf volume, cm ³	1158	-	-	-	-	-	1057	1085	1047	-	-	-
Evaluation (see page 77)	0	-	-	-	-	-	0	0	0	-	-	-

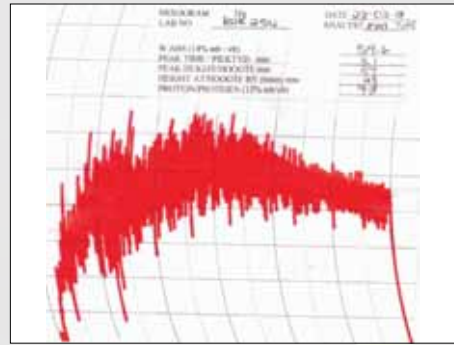
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

21

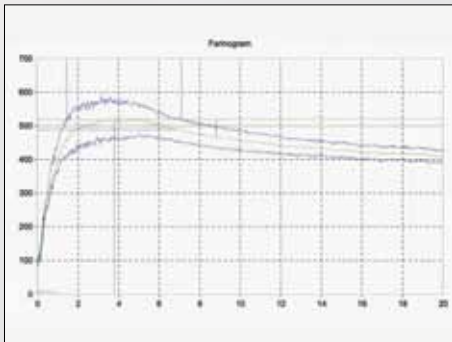


22

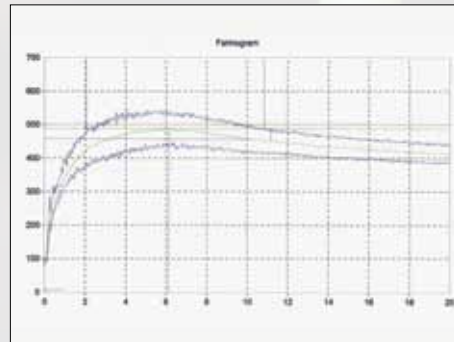


FARINOGRAM

21

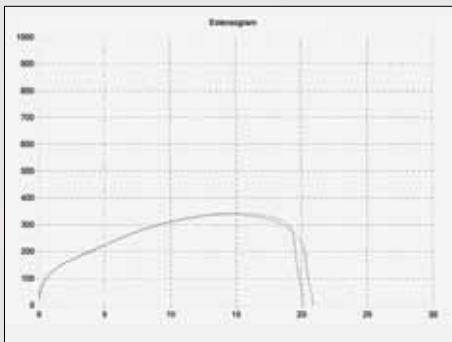


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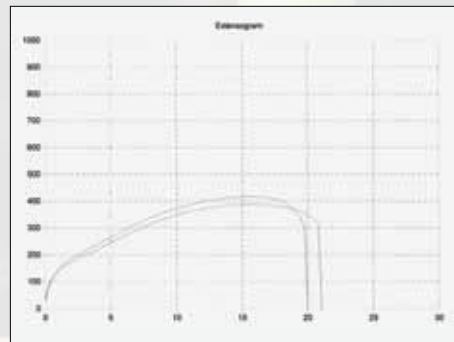


EXTENSOGRAM

21

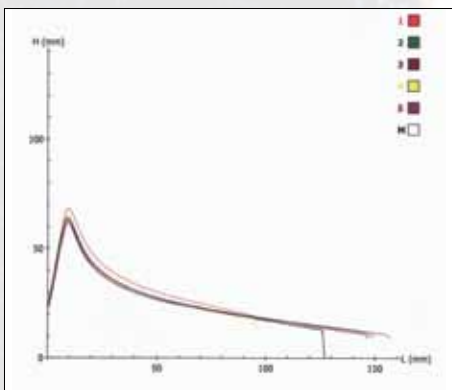


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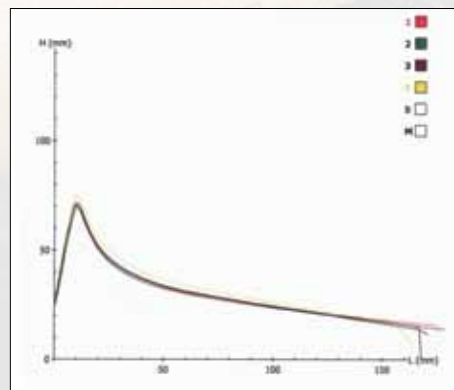


ALVEOGRAM

21



22



South African Quality data per production region

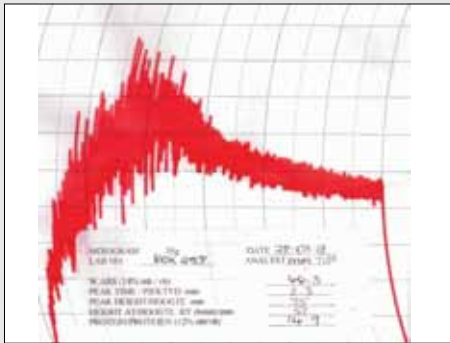
SUMMER RAINFALL AND IRRIGATION WHEAT

PRODUCTION REGION	(23) Free State North-Western Region (Bultfontein)				(24) Free State Central Region							
WHEAT												
	ave	min	max	stdev	ave	min	max	stdev				
Protein (12% mb), %	13.9	11.7	17.1	2.06	12.4	10.5	14.9	1.16				
Falling number, sec	388	263	445	66.93	400	359	463	32.18				
1000 Kernel mass (13% mb), g	37.3	33.1	42.1	3.50	35.3	29.4	49.0	5.37				
Hectolitre mass (dirty), kg/hl	80.8	79.0	82.4	1.54	80.3	77.7	82.1	1.45				
Screenings (<1.8 mm sieve), %	2.06	1.18	3.70	1.17	2.38	1.11	5.22	1.33				
Total damaged kernels, %	0.69	0.16	1.88	0.71	0.23	0.12	0.48	0.10				
Combined deviations, %	3.12	1.50	6.06	2.10	2.95	1.96	5.34	1.13				
Number of samples	6				11							
CULTIVARS												
		PAN 3471	43.2			PAN 3471	43.4					
cultivars with highest % occurrence		SST 387	13.7			PAN 3400	16.3					
		PAN 3120	11.7			PAN 3161	9.1					
		PAN 3368	10.3			SST 875	8.9					
		SST 875	7.2			SST 884	8.8					
Number of samples	6				11							
MIXOGRAM (Quadromat Junior)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	2.5	1.6	3.2	0.58	2.8	2.4	4.0	0.49				
Tail height (6 min), mm	48	45	51	2.28	48	44	53	2.81				
Number of samples	6				11							
	COMPOSITE SAMPLES											
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
Bühler Extraction, %	73.6	74.5	-	-	-	-	71.7	72.1	72.6	-	-	-
FLOUR												
Protein (12% mb), %	12.9	10.4	-	-	-	-	12.2	10.5	9.2	-	-	-
Ash (db), %	0.65	0.63	-	-	-	-	0.60	0.64	0.63	-	-	-
Colour, KJ (wet)	-3.9	-4.7	-	-	-	-	-4.4	-4.7	-4.2	-	-	-
Colour, Konica Minolta CM5 (dry)												
L*	93.47	94.24	-	-	-	-	93.60	94.03	93.85	-	-	-
a*	0.50	0.40	-	-	-	-	0.44	0.40	0.37	-	-	-
b*	9.78	9.16	-	-	-	-	10.23	9.68	10.27	-	-	-
RVA												
Peak Viscosity, cP	1597	2606	-	-	-	-	2457	2423	2394	-	-	-
Minimum viscosity (Through), cP	1405	1860	-	-	-	-	1877	1729	1716	-	-	-
Final Viscosity, cP	1712	2874	-	-	-	-	2710	2730	2706	-	-	-
Peak Time, min	6.73	7.00	-	-	-	-	7.00	7.00	7.00	-	-	-
GLUTEN												
Wet gluten (14% mb), %	37.5	28.4	-	-	-	-	34.0	29.1	23.1	-	-	-
Dry gluten (14% mb), %	12.2	9.4	-	-	-	-	11.1	9.5	8.0	-	-	-
Gluten Index	75	97	-	-	-	-	91	93	98	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	61.5	57.9	-	-	-	-	60.7	58.5	60.6	-	-	-
Development time, min	4.8	5.2	-	-	-	-	5.2	4.7	1.9	-	-	-
Stability, min	4.9	6.5	-	-	-	-	6.5	5.6	10.6	-	-	-
Mixing tolerance index, BU	51	54	-	-	-	-	46	51	25	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	91	105	-	-	-	-	112	88	102	-	-	-
Maximum height, BU	324	402	-	-	-	-	395	361	481	-	-	-
Extensibility, mm	201	188	-	-	-	-	207	178	160	-	-	-
ALVEOGRAM												
Strength (S), cm ²	38.2	37.4	-	-	-	-	34.6	28.9	29.4	-	-	-
Stability (P), mm	73	67	-	-	-	-	80	77	146	-	-	-
Distensibility (L), mm	147	154	-	-	-	-	96	83	30	-	-	-
Configuration ratio (P/L)	0.50	0.44	-	-	-	-	0.83	0.93	4.87	-	-	-
MIXOGRAM												
Peak time, min	2.0	2.9	-	-	-	-	2.4	2.4	3.4	-	-	-
100g BAKING TEST												
Loaf volume, cm ³	1153	1097	-	-	-	-	1250	1068	856	-	-	-
Evaluation (see page 77)	0	0	-	-	-	-	0	0	0	-	-	-

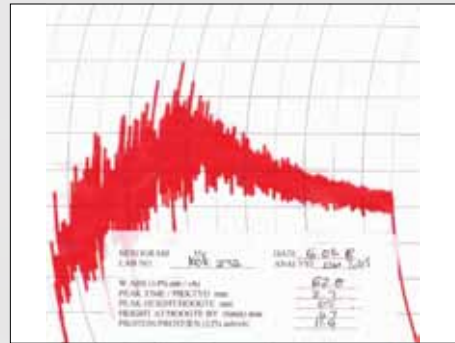
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

23

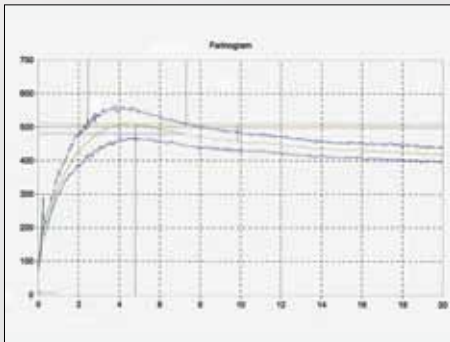


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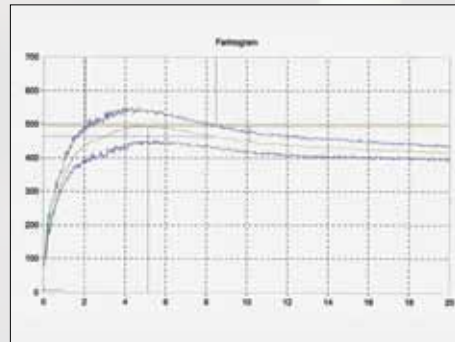


FARINOGRAM

23

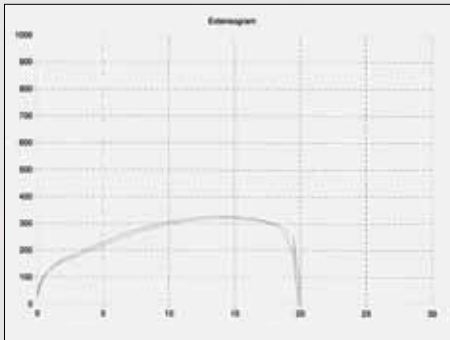


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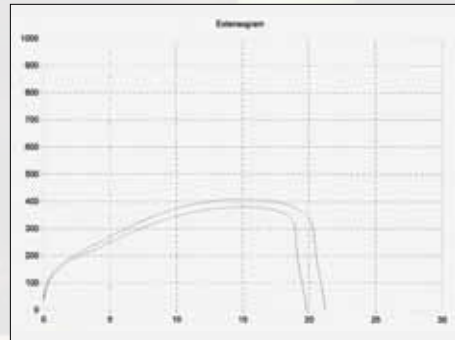


EXTENSOGRAM

23

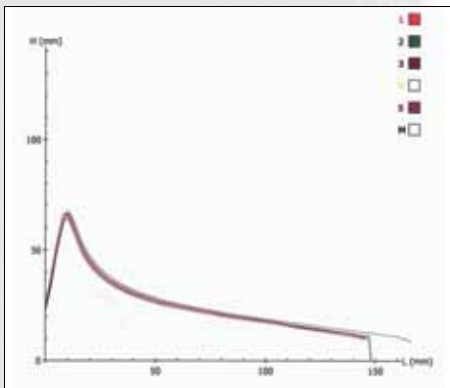


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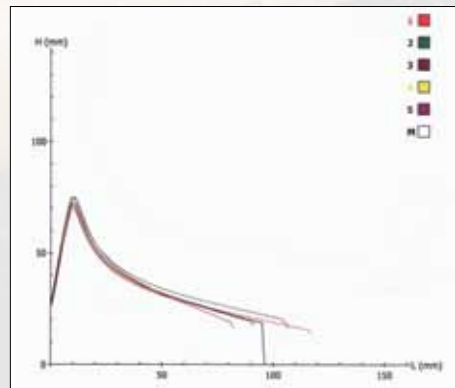


ALVEOGRAM

23



24



South African Quality data per production region

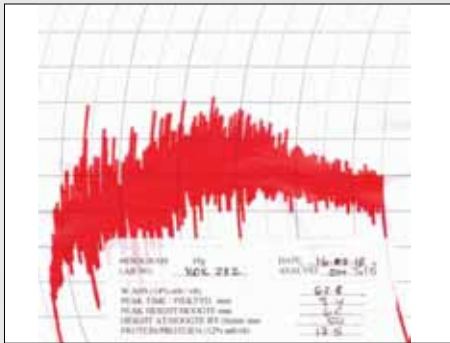
SUMMER RAINFALL AND IRRIGATION WHEAT

PRODUCTION REGION	(26) Free State South-Eastern Region				(27) Free State Northern Region							
WHEAT												
	ave	min	max	stdev	ave	min	max	stdev				
Protein (12% mb), %	12.4	9.2	14.7	2.19	12.2	12.0	12.6	0.32				
Falling number, sec	290	208	348	55.56	358	324	410	45.54				
1000 Kernel mass (13% mb), g	36.0	32.9	39.8	3.12	40.3	37.7	42.2	2.35				
Hectolitre mass (dirty), kg/hl	79.1	75.3	83.7	4.12	79.4	78.3	80.2	1.00				
Screenings (<1.8 mm sieve), %	3.01	1.39	6.58	2.11	0.83	0.49	1.38	0.48				
Total damaged kernels, %	1.03	0.38	2.32	0.86	0.41	0.32	0.46	0.08				
Combined deviations, %	4.79	1.89	10.72	3.64	1.47	1.07	2.26	0.69				
Number of samples	5				3							
CULTIVARS												
		ELANDS	40.0			PAN 3400	21.0					
cultivars with highest % occurrence		SST 884	22.2			SST 88	13.3					
		PAN 3400	9.4			SST 087	12.0					
		PAN 3471	8.4			SST 356	12.0					
		SST 356	7.2			SST 398	12.0					
Number of samples	5				3							
MIXOGRAM (Quadromat Junior)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	3.4	2.8	4.2	0.52	3.3	3.1	3.4	0.17				
Tail height (6 min), mm	50	44	57	4.82	54	53	56	1.53				
Number of samples	5				3							
	COMPOSITE SAMPLES											
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
Bühler Extraction, %	72.3	74.2	-	74.0	-	-	73.0	-	-	-	-	-
FLOUR												
Protein (12% mb), %	12.5	10.1	-	8.1	-	-	11.5	-	-	-	-	-
Ash (db), %	0.53	0.64	-	0.61	-	-	0.60	-	-	-	-	-
Colour, KJ (wet)	-3.6	-4.5	-	-4.6	-	-	-3.9	-	-	-	-	-
Colour, Konica Minolta CM5 (dry) L*	93.08	93.93	-	94.12	-	-	93.46	-	-	-	-	-
a*	0.42	0.42	-	0.38	-	-	0.44	-	-	-	-	-
b*	10.10	9.37	-	9.32	-	-	10.19	-	-	-	-	-
RVA												
Peak Viscosity, cP	2047	2260	-	2185	-	-	2390	-	-	-	-	-
Minimum viscosity (Through), cP	1640	1838	-	1878	-	-	1865	-	-	-	-	-
Final Viscosity, cP	2291	2462	-	2409	-	-	2694	-	-	-	-	-
Peak Time, min	6.93	7.00	-	6.93	-	-	7.00	-	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	35.7	28.1	-	21.4	-	-	30.2	-	-	-	-	-
Dry gluten (14% mb), %	12.0	9.1	-	7.0	-	-	10.3	-	-	-	-	-
Gluten Index	96	96	-	97	-	-	98	-	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	61.1	59.2	-	56.0	-	-	60.8	-	-	-	-	-
Development time, min	7.2	4.8	-	3.2	-	-	6.8	-	-	-	-	-
Stability, min	10.1	5.7	-	6.2	-	-	11.6	-	-	-	-	-
Mixing tolerance index, BU	31	51	-	46	-	-	25	-	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	110	84	-	62	-	-	122	-	-	-	-	-
Maximum height, BU	408	325	-	312	-	-	426	-	-	-	-	-
Extensibility, mm	197	182	-	139	-	-	207	-	-	-	-	-
ALVEOGRAM												
Strength (S), cm ²	46.5	31.2	-	18.8	-	-	46.6	-	-	-	-	-
Stability (P), mm	88	70	-	62	-	-	90	-	-	-	-	-
Distensibility (L), mm	115	115	-	69	-	-	117	-	-	-	-	-
Configuration ratio (P/L)	0.77	0.61	-	0.90	-	-	0.77	-	-	-	-	-
MIXOGRAM												
Peak time, min	2.9	2.8	-	3.2	-	-	2.9	-	-	-	-	-
100g BAKING TEST												
Loaf volume, cm ³	1117	1046	-	921	-	-	1142	-	-	-	-	-
Evaluation (see page 77)	0	0	-	0	-	-	0	-	-	-	-	-

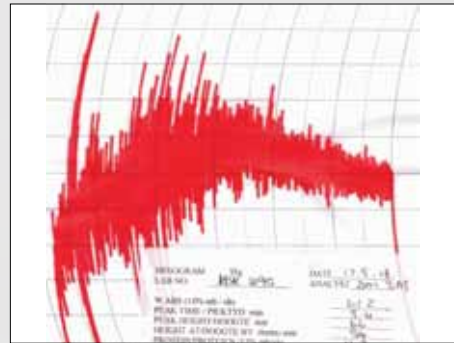
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

26

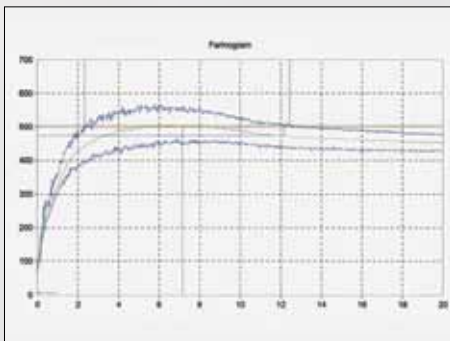


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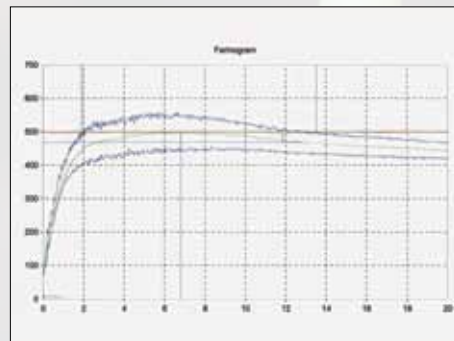


FARINOGRAM

26

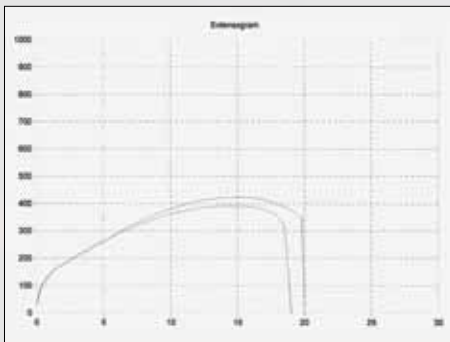


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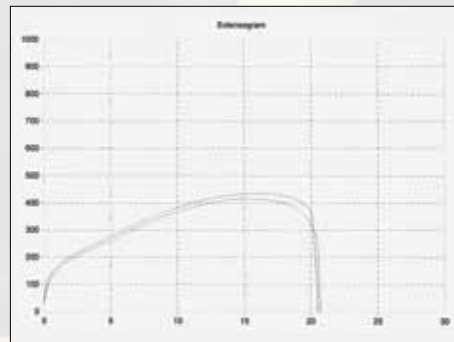


EXTENSOGRAM

26

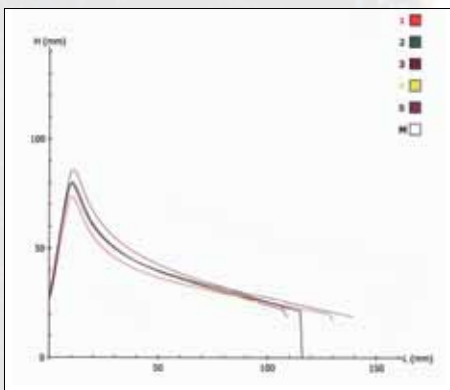


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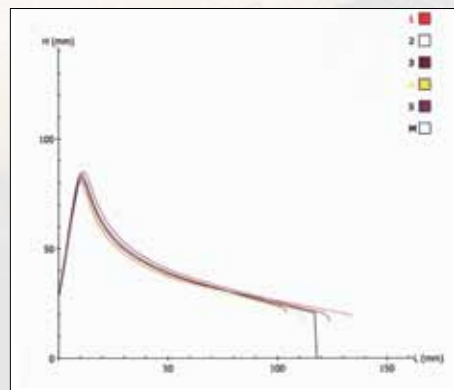


ALVEOGRAM

26



27



South African Quality data per production region

SUMMER RAINFALL AND IRRIGATION WHEAT

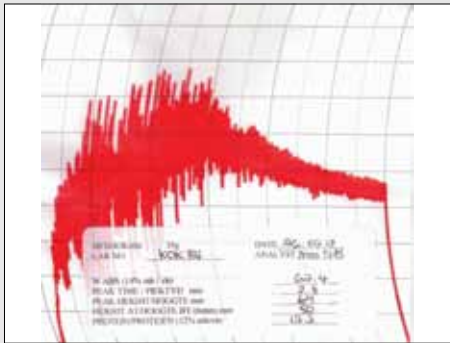
IRRIGATION WHEAT

PRODUCTION REGION	(28) Free State Eastern Region				(33) Mpumalanga Northern Region							
WHEAT												
	ave	min	max	stdev	ave	min	max	stdev				
Protein (12% mb), %	12.7	8.8	14.6	1.49	11.8	10.7	12.4	0.52				
Falling number, sec	272	89	407	84.83	368	326	461	34.10				
1000 Kernel mass (13% mb), g	40.1	36.8	47.8	3.37	39.5	37.4	41.9	1.28				
Hectolitre mass (dirty), kg/hl	79.3	75.5	82.1	2.42	83.7	82.9	84.7	0.70				
Screenings (<1.8 mm sieve), %	0.79	0.03	3.12	0.80	1.16	0.67	1.55	0.36				
Total damaged kernels, %	2.08	0.16	12.80	3.53	0.60	0.16	0.92	0.24				
Combined deviations, %	3.72	0.35	14.26	4.05	2.07	1.72	2.56	0.28				
Number of samples	12				11							
CULTIVARS												
	PAN 3161 34.1				SST 884 41.4							
cultivars with highest % occurrence	SST 884 14.0				SST 875 19.5							
	SST 875 10.8				SST 895 17.0							
	PAN 3111 10.8				DUZI 6.7							
	SST 347 8.3				SST 835 5.5							
Number of samples	12				11							
MIXOGRAM (Quadromat Junior)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	3.0	2.3	3.6	0.38	2.9	2.7	3.3	0.18				
Tail height (6 min), mm	49	37	57	5.30	49	45	51	2.05				
Number of samples	12				11							
COMPOSITE SAMPLES												
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
Bühler Extraction, %	72.9	73.6	-	-	71.4	-	73.4	74.1	73.3	-	-	-
FLOUR												
Protein (12% mb), %	11.8	10.3	-	-	11.1	-	11.2	10.5	9.5	-	-	-
Ash (db), %	0.61	0.62	-	-	0.60	-	0.64	0.65	0.69	-	-	-
Colour, KJ (wet)	-3.5	-4.0	-	-	-3.1	-	-4.0	-4.1	-4.5	-	-	-
Colour, Konica Minolta CM5 (dry)												
L*	93.13	93.60	-	-	93.05	-	93.48	93.45	93.76	-	-	-
a*	0.41	0.39	-	-	0.38	-	0.51	0.54	0.54	-	-	-
b*	9.82	9.16	-	-	10.25	-	9.85	9.94	9.63	-	-	-
RVA												
Peak Viscosity, cP	1605	2243	-	-	1047	-	2282	2357	2652	-	-	-
Minimum viscosity (Through), cP	1405	1763	-	-	812	-	1975	1831	2055	-	-	-
Final Viscosity, cP	1749	2486	-	-	1194	-	2512	2633	2973	-	-	-
Peak Time, min	6.67	7.00	-	-	6.07	-	6.47	7.00	7.00	-	-	-
GLUTEN												
Wet gluten (14% mb), %	32.5	28.8	-	-	30.0	-	31.0	28.7	25.5	-	-	-
Dry gluten (14% mb), %	11.1	9.5	-	-	10.1	-	10.2	9.8	8.5	-	-	-
Gluten Index	92	95	-	-	92	-	92	93	96	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	62.7	60.9	-	-	60.7	-	61.0	59.1	58.0	-	-	-
Development time, min	5.5	4.8	-	-	5.2	-	5.2	5.3	3.7	-	-	-
Stability, min	6.6	6.4	-	-	7.3	-	8.0	7.0	6.3	-	-	-
Mixing tolerance index, BU	45	46	-	-	45	-	35	42	41	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	99	83	-	-	93	-	106	98	84	-	-	-
Maximum height, BU	350	321	-	-	395	-	414	386	369	-	-	-
Extensibility, mm	204	185	-	-	170	-	190	185	164	-	-	-
ALVEOGRAM												
Strength (S), cm ²	41.3	32.7	-	-	35.3	-	38.8	31.0	30.3	-	-	-
Stability (P), mm	95	89	-	-	92	-	89	84	83	-	-	-
Distensibility (L), mm	95	81	-	-	81	-	95	77	79	-	-	-
Configuration ratio (P/L)	1.00	1.10	-	-	1.14	-	0.94	1.09	1.05	-	-	-
MIXOGRAM												
Peak time, min	2.5	2.8	-	-	2.9	-	2.8	2.8	3.1	-	-	-
100g BAKING TEST												
Loaf volume, cm ³	1103	902	-	-	1016	-	1071	1081	910	-	-	-
Evaluation (see page 77)	0	0	-	-	0	-	0	0	0	-	-	-

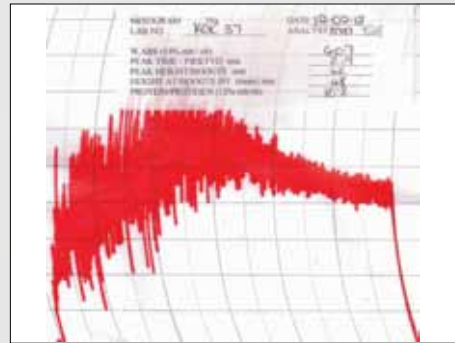
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

28

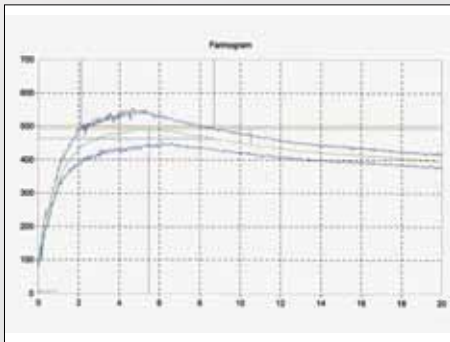


33

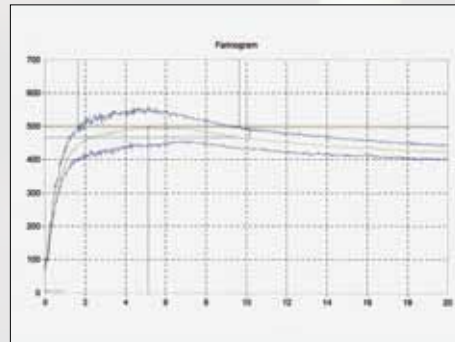


FARINOGRAM

28

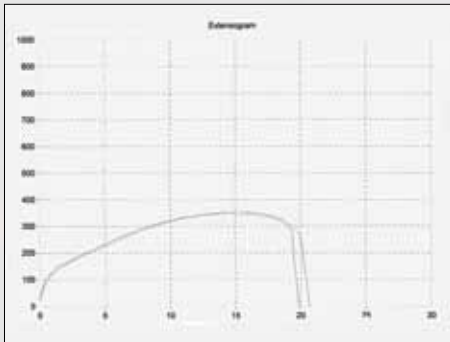


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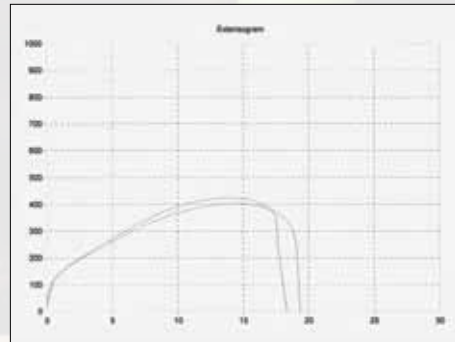


EXTENSOGRAM

28

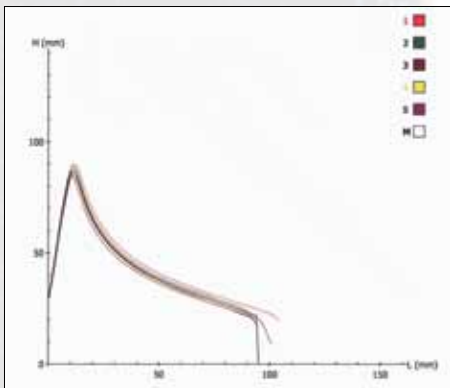


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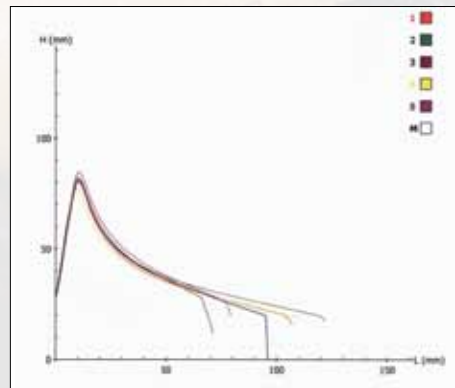


ALVEOGRAM

28



33



South African Quality data per production region

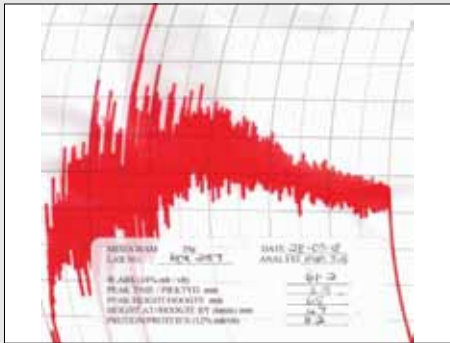
IRRIGATION WHEAT

PRODUCTION REGION	(34) Gauteng Region				(35) Limpopo Region							
WHEAT												
	ave	min	max	stdev	ave	min	max	stdev				
Protein (12% mb), %	12.4	-	-	-	11.3	9.3	13.5	1.36				
Falling number, sec	363	-	-	-	366	339	424	26.04				
1000 Kernel mass (13% mb), g	38.2	-	-	-	39.4	30.7	46.3	6.48				
Hectolitre mass (dirty), kg/hl	81.5	-	-	-	83.5	80.4	84.9	1.59				
Screenings (<1.8 mm sieve), %	1.34	-	-	-	0.70	0.22	1.73	0.55				
Total damaged kernels, %	0.64	-	-	-	0.41	0.06	0.80	0.22				
Combined deviations, %	2.02	-	-	-	1.45	0.84	2.17	0.48				
Number of samples	1				8							
CULTIVARS												
		SST 884	38.0			SST 884	41.3					
cultivars with highest % occurrence		SST 875	34.0			SST 875	30.6					
		OLIFANTS	16.0			SST 843	11.0					
		KROKODIL	12.0			SST 895	7.8					
		-	-			PAN 3471	3.9					
Number of samples	1				8							
MIXOGRAM (Quadromat Junior)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	2.9	-	-	-	3.1	2.7	3.4	0.26				
Tail height (6 min), mm	49	-	-	-	48	42	55	4.55				
Number of samples	1				8							
	COMPOSITE SAMPLES											
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
Bühler Extraction, %	73.6	-	-	-	-	-	74.0	73.7	-	73.8	-	-
FLOUR												
Protein (12% mb), %	11.2	-	-	-	-	-	12.3	10.9	-	8.8	-	-
Ash (db), %	0.60	-	-	-	-	-	0.66	0.62	-	0.58	-	-
Colour, KJ (wet)	-4.3	-	-	-	-	-	-4.2	-4.4	-	-4.6	-	-
Colour, Konica Minolta CM5 (dry)												
L*	93.66	-	-	-	-	-	93.44	93.68	-	94.05	-	-
a*	0.41	-	-	-	-	-	0.54	0.51	-	0.40	-	-
b*	9.02	-	-	-	-	-	10.18	9.90	-	9.11	-	-
RVA												
Peak Viscosity, cP	1748	-	-	-	-	-	2251	2317	-	2706	-	-
Minimum viscosity (Through), cP	1503	-	-	-	-	-	1569	1881	-	2169	-	-
Final Viscosity, cP	1896	-	-	-	-	-	2502	2601	-	3033	-	-
Peak Time, min	6.67	-	-	-	-	-	7.00	7.00	-	7.00	-	-
GLUTEN												
Wet gluten (14% mb), %	31.3	-	-	-	-	-	34.6	29.4	-	23.1	-	-
Dry gluten (14% mb), %	10.2	-	-	-	-	-	11.6	9.9	-	7.8	-	-
Gluten Index	95	-	-	-	-	-	92	97	-	96	-	-
FARINOGRAM												
Water absorption (14% mb), %	60.1	-	-	-	-	-	62.4	59.8	-	56.2	-	-
Development time, min	5.2	-	-	-	-	-	6.7	5.3	-	4.3	-	-
Stability, min	7.2	-	-	-	-	-	8.9	6.5	-	6.2	-	-
Mixing tolerance index, BU	45	-	-	-	-	-	31	48	-	52	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	109	-	-	-	-	-	149	96	-	76	-	-
Maximum height, BU	382	-	-	-	-	-	468	380	-	351	-	-
Extensibility, mm	208	-	-	-	-	-	234	187	-	156	-	-
ALVEOGRAM												
Strength (S), cm ²	40.7	-	-	-	-	-	50.2	37.2	-	30.3	-	-
Stability (P), mm	75	-	-	-	-	-	92	85	-	72	-	-
Distensibility (L), mm	132	-	-	-	-	-	124	98	-	103	-	-
Configuration ratio (P/L)	0.57	-	-	-	-	-	0.74	0.87	-	0.70	-	-
MIXOGRAM												
Peak time, min	2.8	-	-	-	-	-	2.7	2.8	-	2.9	-	-
100g BAKING TEST												
Loaf volume, cm ³	1076	-	-	-	-	-	1129	1073	-	941	-	-
Evaluation (see page 77)	0	-	-	-	-	-	0	0	-	0	-	-

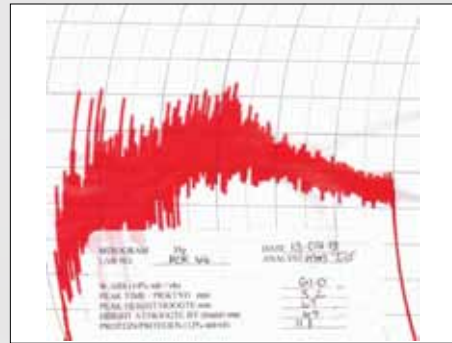
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

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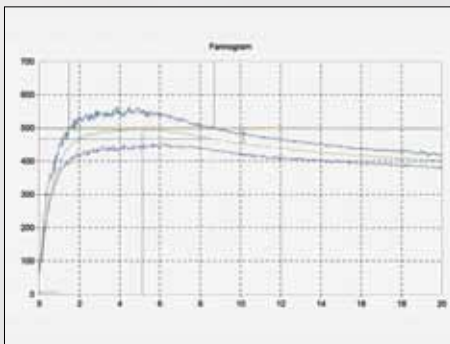


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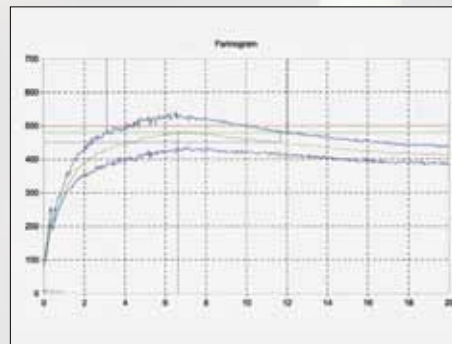


FARINOGRAM

34

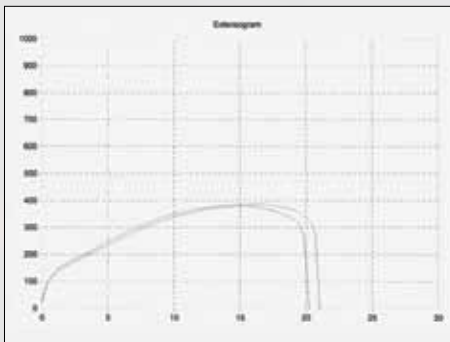


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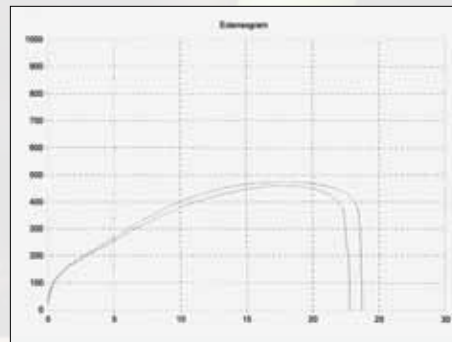


EXTENSOGRAM

34

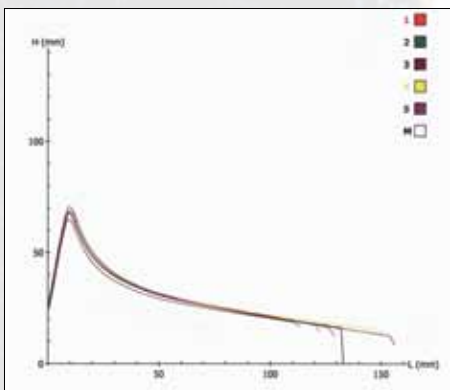


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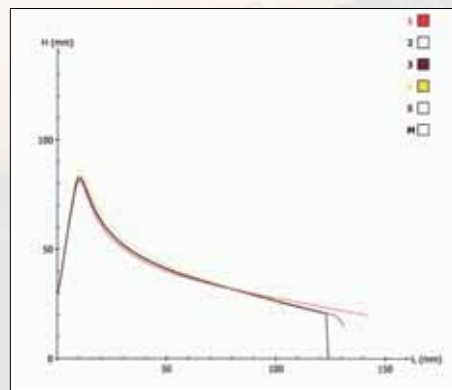


ALVEOGRAM

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South African Quality data per production region

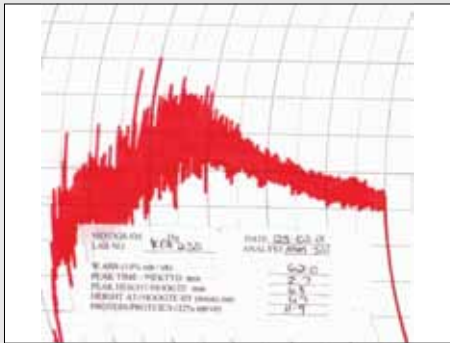
IRRIGATION WHEAT

PRODUCTION REGION	(36) KwaZulu-Natal Region					
WHEAT						
	ave	min	max	stdev		
Protein (12% mb), %	12.4	11.7	13.2	0.54		
Falling number, sec	410	263	473	65.30		
1000 Kernel mass (13% mb), g	36.8	34.4	43.4	2.94		
Hectolitre mass (dirty), kg/hl	83.4	81.6	85.3	1.44		
Screenings (<1.8 mm sieve), %	1.33	0.61	2.05	0.41		
Total damaged kernels, %	0.25	0.10	0.48	0.13		
Combined deviations, %	1.96	1.23	2.59	0.39		
Number of samples	9					
CULTIVARS						
		SST 875	42.1			
cultivars with highest % occurrence		SST 835	24.4			
		SST 884	18.1			
		SST 895	6.9			
		PAN 3471	5.9			
Number of samples	9					
MIXOGRAM (Quadromat Junior)						
	ave	min	max	stdev		
Peak time, min	2.7	2.2	3.2	0.31		
Tail height (6 min), mm	48	45	51	1.83		
Number of samples	9					
COMPOSITE SAMPLES						
CLASS AND GRADE	B1	B2	B3	B4	UT	COW
Bühler Extraction, %	74.8	74.8	-	-	-	-
FLOUR						
Protein (12% mb), %	11.9	10.6	-	-	-	-
Ash (db), %	0.60	0.57	-	-	-	-
Colour, KJ (wet)	-4.2	-4.1	-	-	-	-
Colour, Konica Minolta CM5 (dry)						
L*	93.79	93.88	-	-	-	-
a*	0.43	0.41	-	-	-	-
b*	9.22	9.11	-	-	-	-
RVA						
Peak Viscosity, cP	2311	1685	-	-	-	-
Minimum viscosity (Through), cP	1671	1488	-	-	-	-
Final Viscosity, cP	2576	1846	-	-	-	-
Peak Time, min	7.00	6.87	-	-	-	-
GLUTEN						
Wet gluten (14% mb), %	33.6	28.7	-	-	-	-
Dry gluten (14% mb), %	11.9	9.8	-	-	-	-
Gluten Index	84	95	-	-	-	-
FARINOGRAM						
Water absorption (14% mb), %	60.7	59.1	-	-	-	-
Development time, min	5.0	5.3	-	-	-	-
Stability, min	5.4	6.0	-	-	-	-
Mixing tolerance index, BU	50	53	-	-	-	-
EXTENSOGRAM (45 min pull)						
Area, cm ²	91	91	-	-	-	-
Maximum height, BU	333	341	-	-	-	-
Extensibility, mm	198	195	-	-	-	-
ALVEOGRAM						
Strength (S), cm ²	36.1	36.3	-	-	-	-
Stability (P), mm	75	69	-	-	-	-
Distensibility (L), mm	123	141	-	-	-	-
Configuration ratio (P/L)	0.61	0.49	-	-	-	-
MIXOGRAM						
Peak time, min	2.3	2.6	-	-	-	-
100g BAKING TEST						
Loaf volume, cm ³	1169	1116	-	-	-	-
Evaluation (see page 77)	0	0	-	-	-	-

RHEOLOGICAL GRAPHS PER PRODUCTION REGION

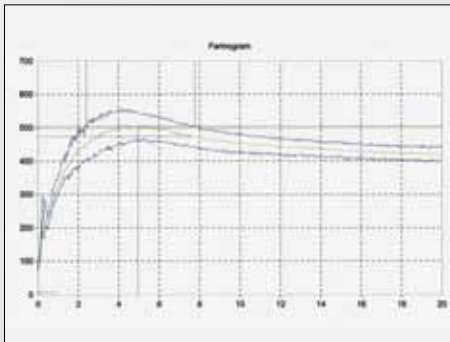
MIXOGRAM

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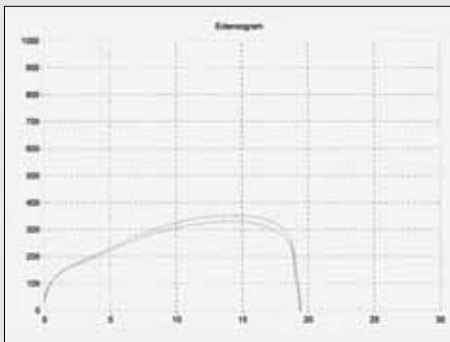
FARINOGRAM

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EXTENSOGRAM

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ALVEOGRAM

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