

South African Quality data per production region

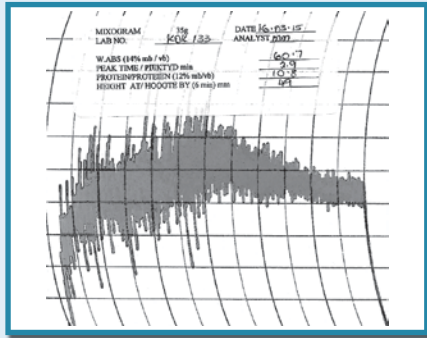
WINTER RAINFALL WHEAT

PRODUCTION REGION	(1) Namaqualand				(2) Swartland Western Region							
WHEAT												
	ave	min	max	stdev	ave	min	max	stdev				
Protein (12% mb), %	11.4	10.4	13.0	1.20	11.0	8.9	12.4	1.05				
Falling number, sec	310	289	324	16.75	401	309	471	48.32				
1000 Kernel mass (13% mb), g	35.6	34.8	36.5	0.79	36.6	33.0	40.8	2.20				
Hectolitre mass (dirty), kg/hl	78.5	78.1	79.2	0.50	77.0	74.0	79.3	1.70				
Screenings (<1.8mm), %	2.69	2.47	2.93	0.19	3.40	1.89	4.90	0.75				
Total damaged kernels, %	1.59	0.92	2.08	0.52	1.68	0.00	3.54	0.91				
Combined deviations, %	4.86	4.24	5.47	0.52	6.50	4.81	9.06	1.13				
Number of samples	4				14							
CULTIVARS												
	SST 015			42.0	SST 88			38.6				
cultivars with highest % occurrence	SST 88			19.0	SST 015			20.7				
	SST 056			18.5	SST 027			15.6				
	SST 027			8.8	SST 087			12.4				
	SST 047			6.3	SST 056			6.3				
Number of samples	4				14							
MIXOGRAM (Quadromat)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	2.9	2.7	3.0	0.13	3.2	2.8	3.5	0.21				
Tail height (6 min), mm	48	46	49	1.41	49	46	53	1.77				
Number of samples	4				14							
COMPOSITE SAMPLES												
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
BÜHLER EXTRACTION, %	-	-	71.6	-	71.7	-	-	-	72.4	-	72.6	-
FLOUR												
Protein (12% mb), %	-	-	9.5	-	11.3	-	-	-	9.7	-	10.4	-
Ash (db), %	-	-	0.57	-	0.57	-	-	-	0.62	-	0.59	-
Colour, KJ (wet)	-	-	-3.6	-	-3.4	-	-	-	-3.4	-	-3.5	-
Colour, Minolta CM5 (dry)	-	-	94.16	-	93.90	-	-	-	93.77	-	94.15	-
L*	-	-	0.37	-	0.41	-	-	-	0.41	-	0.37	-
a*	-	-	10.27	-	10.03	-	-	-	10.59	-	10.38	-
b*	-	-		-		-	-	-		-		-
RVA												
Peak Viscosity, cP	-	-	1912	-	1867	-	-	-	2246	-	2255	-
Minimum viscosity (Through), cP	-	-	1546	-	1528	-	-	-	1631	-	1644	-
Final Viscosity, cP	-	-	2158	-	2035	-	-	-	2599	-	2616	-
Peak Time, min	-	-	7.00	-	7.00	-	-	-	7.00	-	7.00	-
GLUTEN												
Wet gluten (14% mb), %	-	-	24.2	-	30.7	-	-	-	26.5	-	26.5	-
Dry gluten (14% mb), %	-	-	8.2	-	10.4	-	-	-	9.3	-	9.4	-
Gluten Index	-	-	92	-	88	-	-	-	91	-	91	-
FARINOGRAM												
Water absorption (14% mb), %	-	-	57.2	-	59.4	-	-	-	58.3	-	57.9	-
Development time, min	-	-	4.7	-	6.0	-	-	-	4.5	-	5.5	-
Stability, min	-	-	8.1	-	8.6	-	-	-	10.2	-	9.9	-
Mixing tolerance index, BU	-	-	35	-	33	-	-	-	20	-	28	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	-	-	89	-	107	-	-	-	87	-	90	-
Maximum height, BU	-	-	383	-	388	-	-	-	378	-	360	-
Extensibility, mm	-	-	165	-	202	-	-	-	167	-	180	-
ALVEOGRAM												
Strength (S), cm ²	-	-	32.4	-	39.4	-	-	-	34.4	-	35.3	-
Stability (P), mm	-	-	72	-	73	-	-	-	79	-	71	-
Distensibility (L), mm	-	-	113	-	143	-	-	-	110	-	130	-
Configuration ratio (P/L)	-	-	0.64	-	0.51	-	-	-	0.72	-	0.55	-
MIXOGRAM												
Peak time, min	-	-	3.0	-	2.7	-	-	-	2.7	-	2.9	-
100g BAKING TEST												
Loaf volume, cm ³	-	-	795	-	875	-	-	-	858	-	815	-
Evaluation (see page 60)	-	-	0	-	0	-	-	-	0	-	0	-

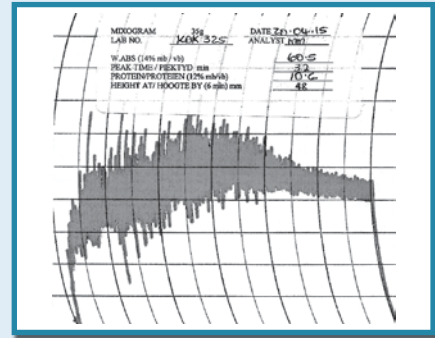
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

1

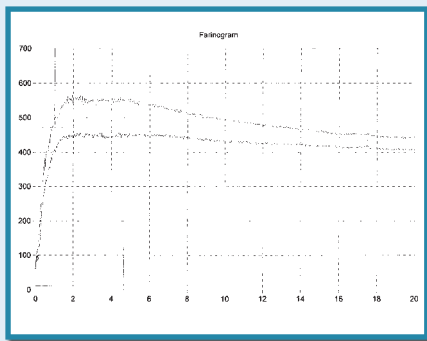


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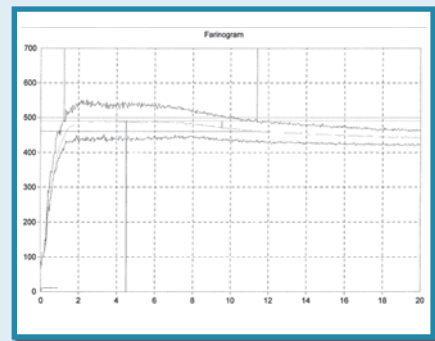


FARINOGRAM

1

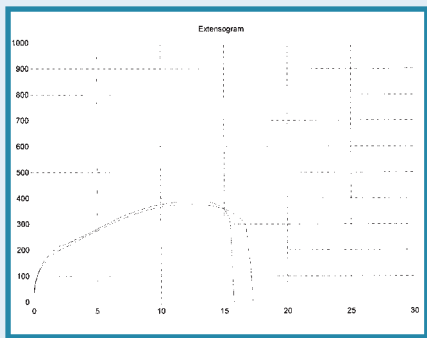


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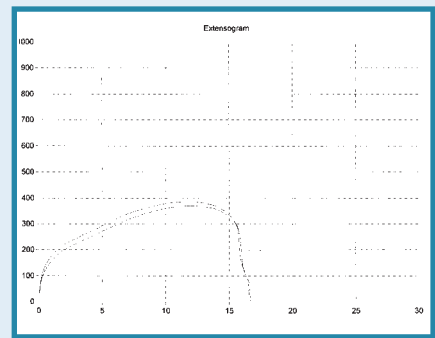


EXTENSOGRAM

1

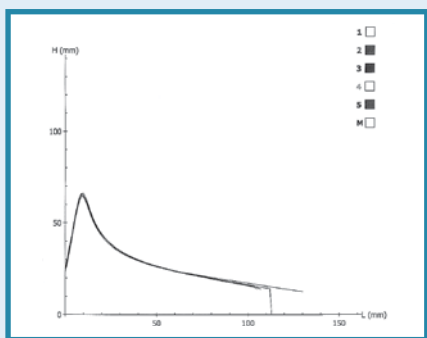


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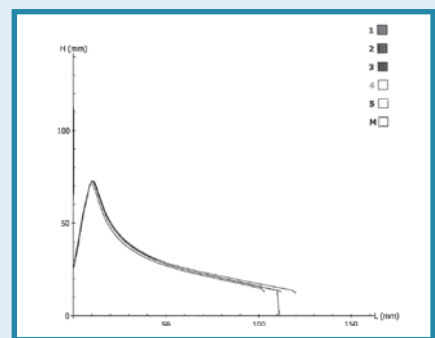


ALVEOGRAM

1



2



South African Quality data per production region

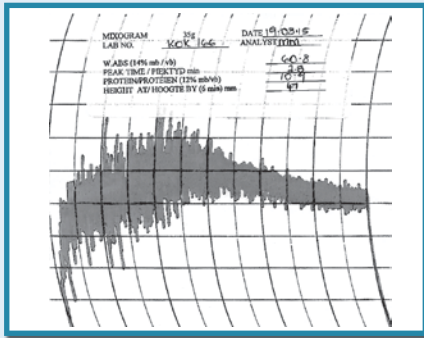
WINTER RAINFALL WHEAT

PRODUCTION REGION	(3) Swartland Central Region				(4) Swartland Eastern Region							
WHEAT												
	ave	min	max	stdev	ave	min	max	stdev				
Protein (12% mb), %	11.2	8.3	13.50	1.17	10.7	7.2	12.8	1.35				
Falling number, sec	380	333	452	22.03	388	324	451	28.85				
1000 Kernel mass (13% mb), g	38.8	31.5	43.4	2.64	39.0	33.9	46.7	3.14				
Hectolitre mass (dirty), kg/hl	79.9	74.0	83.1	1.85	81.3	76.9	83.8	1.52				
Screenings (<1.8mm), %	2.17	0.40	6.97	1.16	1.44	0.11	4.82	1.28				
Total damaged kernels, %	1.70	0.36	4.68	0.84	1.41	0.00	3.86	0.84				
Combined deviations, %	5.01	1.00	9.44	1.80	3.39	0.32	7.84	1.70				
Number of samples	51				31							
CULTIVARS												
	SST 015 34.5				SST 015 33.5							
cultivars	SST 88 24.5				SST 88 26.4							
with highest %	SST 056 15.9				SST 087 14.8							
occurrence	SST 027 11.2				SST 056 13.4							
	SST 087 7.5				SST 027 8.0							
Number of samples	51				31							
MIXOGRAM (Quadromat)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	2.6	2.1	3.1	0.24	2.6	2.0	3.4	0.39				
Tail height (6 min), mm	49	43	58	2.75	47	41	53	3.14				
Number of samples	51				31							
COMPOSITE SAMPLES												
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
BÜHLER EXTRACTION, %	71.7	72.4	73.1	73.0	73.3	-	71.4	72.1	72.4	73.3	72.9	-
FLOUR												
Protein (12% mb), %	10.9	9.8	9.6	9.0	10.9	-	11.0	10.8	9.5	8.7	10.3	-
Ash (db), %	0.58	0.58	0.62	0.58	0.61	-	0.59	0.54	0.58	0.59	0.59	-
Colour, KJ (wet)	-3.6	-3.8	-3.7	-3.6	-3.5	-	-3.8	-3.8	-3.8	-3.9	-3.5	-
Colour, Minolta CM5 (dry)												
L*	94.08	94.25	94.12	94.00	93.88	-	94.17	94.10	94.08	94.26	93.99	-
a*	0.43	0.39	0.41	0.44	0.46	-	0.42	0.48	0.41	0.34	0.39	-
b*	10.52	10.33	9.92	9.86	10.58	-	10.56	10.46	11.11	9.82	9.96	-
RVA												
Peak Viscosity, cP	2192	2158	2246	2222	2102	-	2253	2056	2192	2289	2191	-
Minimum viscosity (Through), cP	1608	1587	1651	1601	1554	-	1614	1526	1623	1724	1592	-
Final Viscosity, cP	2583	2602	2719	2702	2466	-	2722	2447	2667	2810	2571	-
Peak Time, min	7.00	7.00	7.00	7.00	7.00	-	7.00	7.00	7.00	7.00	7.00	-
GLUTEN												
Wet gluten (14% mb), %	30.9	26.1	27.6	24.2	-	-	29.4	29.1	24.6	27.1	30.1	-
Dry gluten (14% mb), %	10.7	8.8	9.4	8.1	-	-	10.1	9.9	7.9	10.5	10.6	-
Gluten Index	92	94	81	92	90	-	88	92	88	92	80	-
FARINOGRAM												
Water absorption (14% mb), %	60.7	59.4	60.4	59.5	60.7	-	59.7	60.1	58.9	58.6	59.4	-
Development time, min	5.4	5.2	4.0	4.2	4.5	-	5.3	5.0	4.0	3.7	4.7	-
Stability, min	9.3	7.6	5.6	5.7	6.4	-	8.0	6.0	6.7	5.0	5.7	-
Mixing tolerance index, BU	25	35	40	41	39	-	32	43	37	46	48	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	99	86	68	72	77	-	98	77	78	58	78	-
Maximum height, BU	366	353	271	294	275	-	373	291	297	234	283	-
Extensibility, mm	193	176	175	171	196	-	188	184	185	169	194	-
ALVEOGRAM												
Strength (S), cm ²	41.9	35.9	31.2	28.0	33.8	-	37.5	35.2	30.6	25.8	30.1	-
Stability (P), mm	80	81	74	75	73	-	76	77	72	72	64	-
Distensibility (L), mm	146	123	128	102	132	-	130	126	128	102	146	-
Configuration ratio (P/L)	0.55	0.66	0.58	0.74	0.55	-	0.58	0.61	0.56	0.71	0.44	-
MIXOGRAM												
Peak time, min	2.0	2.5	2.3	2.5	2.3	-	2.5	2.4	2.5	2.3	2.2	-
100g BAKING TEST												
Loaf volume, cm ³	804	778	840	818	908	-	959	958	836	801	904	-
Evaluation (see page 60)	2	0	0	0	0	-	0	0	0	0	0	-

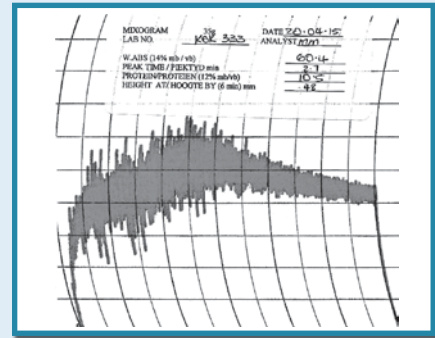
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

3

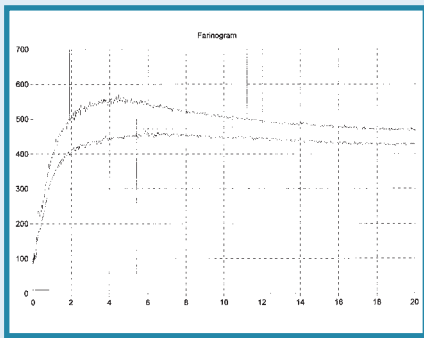


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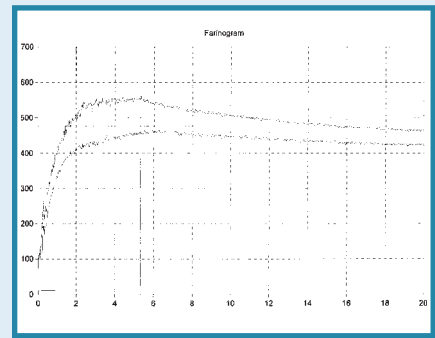


FARINOGRAM

3

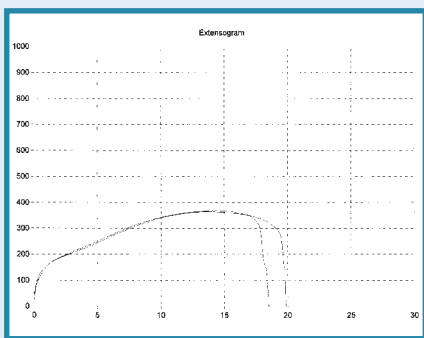


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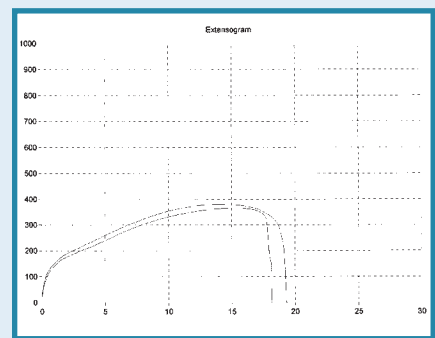


EXTENSOGRAM

3

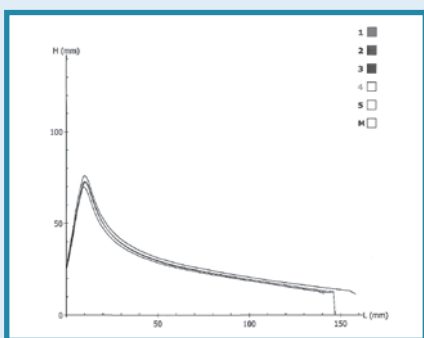


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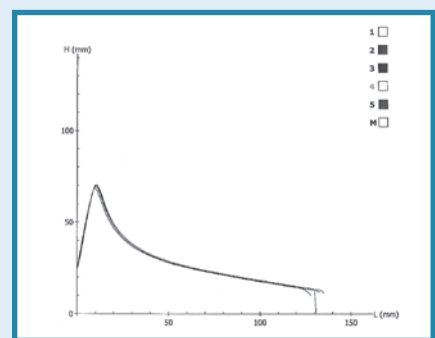


ALVEOGRAM

3



4



South African Quality data per production region

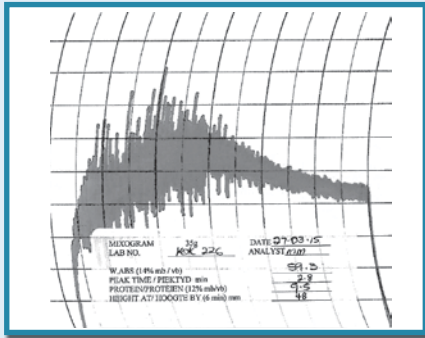
WINTER RAINFALL WHEAT

PRODUCTION REGION	(5) Rûens Western Region				(6) Rûens Eastern Region							
WHEAT												
	ave	min	max	stdev	ave	min	max	stdev				
Protein (12% mb), %	11.3	10.4	12.4	0.65	11.1	9.2	12.8	0.98				
Falling number, sec	381	334	413	23.07	360	311	433	26.97				
1000 Kernel mass (13% mb), g	43.8	40.9	46.3	1.39	42.8	40.0	46.0	1.81				
Hectolitre mass (dirty), kg/hl	79.0	73.2	82.4	2.11	80.2	79.2	81.7	0.76				
Screenings (<1.8mm), %	0.82	0.16	2.06	0.62	1.23	0.18	2.70	0.78				
Total damaged kernels, %	1.91	0.84	8.56	1.80	1.44	0.32	4.00	0.84				
Combined deviations, %	3.39	1.74	9.08	1.76	3.32	1.38	6.08	1.34				
Number of samples	17				19							
CULTIVARS												
	SST 88			34.5	SST 88			33.2				
cultivars	SST 015			28.5	SST 015			27.7				
with highest %	SST 027			14.8	SST 027			16.5				
occurrence	SST 087			9.8	SST 087			8.2				
	SST 056			9.4	SST 056			7.1				
Number of samples	17				19							
MIXOGRAM (Quadromat)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	2.8	2.1	3.1	0.29	2.4	2.1	3.0	0.20				
Tail height (6 min), mm	49	43	55	2.84	49	42	55	2.62				
Number of samples	17				19							
COMPOSITE SAMPLES												
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
BÜHLER EXTRACTION, %	74.4	73.7	73.6	-	-	-	73.3	73.9	73.1	73.3	-	-
FLOUR												
Protein (12% mb), %	11.1	10.7	9.6	-	-	-	11.4	10.5	9.6	8.8	-	-
Ash (db), %	0.62	0.61	0.58	-	-	-	0.56	0.61	0.55	0.59	-	-
Colour, KJ (wet)	-3.1	-3.3	-3.3	-	-	-	-3.6	-3.4	-3.7	-3.6	-	-
Colour, Minolta CM5 (dry)												
L*	93.84	93.89	93.85	-	-	-	94.14	93.75	94.08	94.09	-	-
a*	0.49	0.52	0.50	-	-	-	0.39	0.41	0.38	0.33	-	-
b*	9.28	9.70	9.93	-	-	-	9.63	10.07	10.21	10.18	-	-
RVA												
Peak Viscosity, cP	2154	2270	2307	-	-	-	2393	2330	2191	2171	-	-
Minimum viscosity (Through), cP	1553	1671	1613	-	-	-	1776	1800	1664	1672	-	-
Final Viscosity, cP	2581	2671	2780	-	-	-	2826	2756	2597	2543	-	-
Peak Time, min	7.00	7.00	7.00	-	-	-	7.00	7.00	7.00	7.00	-	-
GLUTEN												
Wet gluten (14% mb), %	28.3	28.5	25.7	-	-	-	30.2	28.8	25.5	22.6	-	-
Dry gluten (14% mb), %	8.1	9.8	8.9	-	-	-	10.6	9.7	8.7	7.7	-	-
Gluten Index	91	93	86	-	-	-	80	80	79	89	-	-
FARINOGRAM												
Water absorption (14% mb), %	59.6	60.6	58.3	-	-	-	60.9	60.2	60.0	57.6	-	-
Development time, min	5.2	4.5	4.7	-	-	-	5.2	4.2	3.2	2.2	-	-
Stability, min	6.8	5.8	5.7	-	-	-	6.4	5.2	5.1	5.8	-	-
Mixing tolerance index, BU	39	53	54	-	-	-	44	47	42	35	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	91	84	73	-	-	-	82	66	63	63	-	-
Maximum height, BU	314	285	284	-	-	-	286	246	238	284	-	-
Extensibility, mm	208	210	183	-	-	-	202	187	183	155	-	-
ALVEOGRAM												
Strength (S), cm ²	35.7	32.1	28.1	-	-	-	40.3	29.7	30.6	27.2	-	-
Stability (P), mm	69	72	70	-	-	-	76	71	76	72	-	-
Distensibility (L), mm	147	131	110	-	-	-	161	131	127	101	-	-
Configuration ratio (P/L)	0.47	0.55	0.64	-	-	-	0.47	0.54	0.60	0.71	-	-
MIXOGRAM												
Peak time, min	2.5	2.3	2.5	-	-	-	2.3	2.0	2.0	2.5	-	-
100g BAKING TEST												
Loaf volume, cm ³	922	883	846	-	-	-	869	811	803	742	-	-
Evaluation (see page 60)	0	0	0	-	-	-	1	1	0	0	-	-

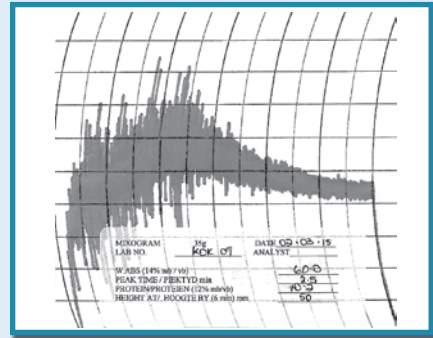
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

5

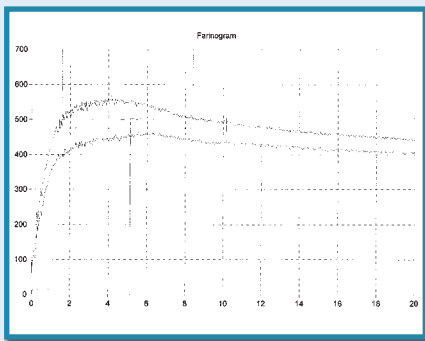


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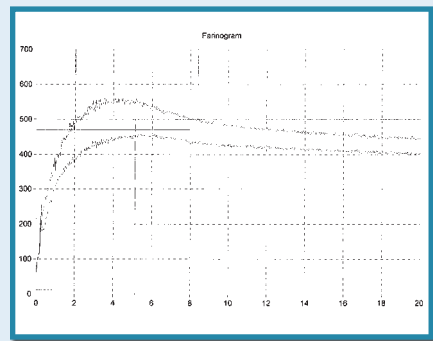


FARINOGRAM

5

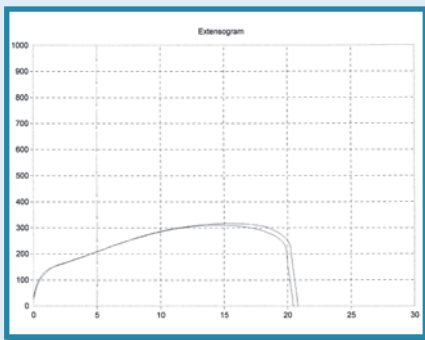


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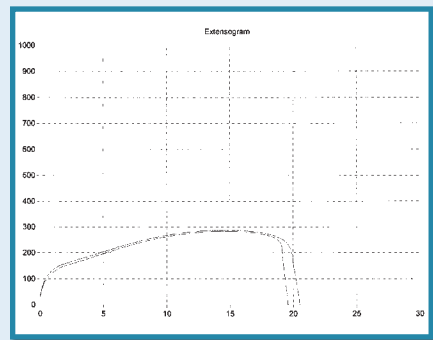


EXTENSOGRAM

5

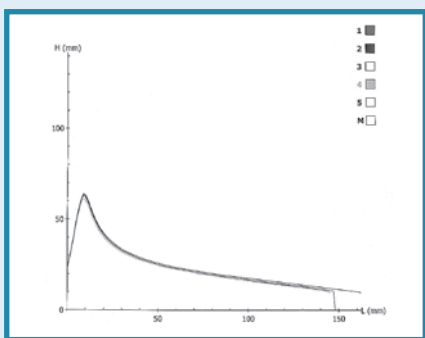


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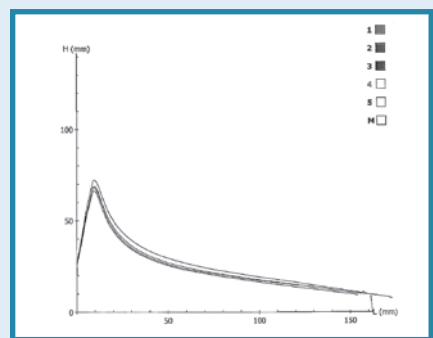


ALVEOGRAM

5



6



South African Quality data per production region

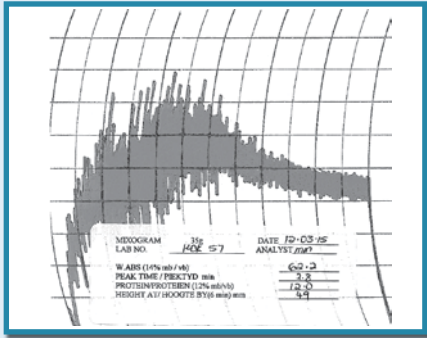
IRRIGATION WHEAT

PRODUCTION REGION	(10) Griqualand-West				(11) Vaalharts							
WHEAT												
	ave	min	max	stdev	ave	min	max	stdev				
Protein (12% mb), %	12.1	10.3	13.8	1.00	11.9	10.6	13.3	0.80				
Falling number, sec	380	271	570	65.01	364	320	402	21.52				
1000 Kernel mass (13% mb), g	37.6	33.3	43.7	2.66	37.7	34.6	41.0	1.95				
Hectolitre mass (dirty), kg/hl	80.9	77.3	84.2	2.47	82.3	81.1	84.2	0.90				
Screenings (<1.8mm), %	1.40	0.10	3.94	0.99	1.93	0.28	4.38	1.11				
Total damaged kernels, %	0.73	0.08	2.12	0.66	0.62	0.16	1.46	0.42				
Combined deviations, %	2.87	0.38	7.46	1.70	3.27	0.82	5.34	1.40				
Number of samples	23				12							
CULTIVARS												
	SST 835 30.5				PAN 3471 39.8							
cultivars with highest % occurrence	SST 843 20.6				SST 835 19.3							
	PAN 3471 15.6				SST 875 11.5							
	SST 875 14.8				SST 884 9.9							
	SST 884 9.3				SST 843 8.4							
Number of samples	23				12							
MIXOGRAM (Quadromat)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	2.8	2.1	4.0	0.37	2.9	2.4	3.6	0.38				
Tail height (6 min), mm	48	42	54	2.81	48	46	50	1.15				
Number of samples	23				12							
COMPOSITE SAMPLES												
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
BÜHLER EXTRACTION, %	72.9	73.4	73.7	-	72.1	-	75.1	74.0	74.0	-	-	-
FLOUR												
Protein (12% mb), %	12.0	10.7	9.6	-	11.9	-	11.8	10.5	9.8	-	-	-
Ash (db), %	0.57	0.63	0.55	-	0.66	-	0.59	0.56	0.62	-	-	-
Colour, KJ (wet)	-3.5	-3.7	-3.9	-	-3.0	-	-3.2	-3.4	-3.6	-	-	-
Colour, Minolta CM5 (dry)												
L*	93.72	93.94	94.21	-	93.46	-	93.50	93.88	94.07	-	-	-
a*	0.59	0.55	0.44	-	0.44	-	0.57	0.48	0.47	-	-	-
b*	10.01	9.96	9.54	-	9.35	-	9.98	9.52	9.38	-	-	-
RVA												
Peak Viscosity, cP	2171	2362	2592	-	2143	-	2217	2394	2501	-	-	-
Minimum viscosity (Through), cP	1645	1838	1910	-	1773	-	1768	1803	1910	-	-	-
Final Viscosity, cP	2382	2625	2940	-	2273	-	2430	2711	2852	-	-	-
Peak Time, min	7.00	7.00	7.00	-	7.00	-	7.00	7.00	7.00	-	-	-
GLUTEN												
Wet gluten (14% mb), %	33.4	31.0	26.6	-	34.4	-	32.8	29.7	27.4	-	-	-
Dry gluten (14% mb), %	10.9	9.9	8.8	-	11.7	-	11.0	9.7	9.1	-	-	-
Gluten Index	79	90	84	-	85	-	84	83	80	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	61.0	59.4	57.3	-	60.1	-	59.0	57.6	58.1	-	-	-
Development time, min	5.8	5.2	3.2	-	5.3	-	4.9	5.4	3.2	-	-	-
Stability, min	7.2	6.1	7.8	-	7.5	-	6.6	6.6	5.0	-	-	-
Mixing tolerance index, BU	39	42	29	-	39	-	42	47	49	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	97	86	91	-	111	-	113	96	80	-	-	-
Maximum height, BU	350	348	418	-	367	-	372	374	332	-	-	-
Extensibility, mm	199	183	159	-	222	-	221	187	171	-	-	-
ALVEOGRAM												
Strength (S), cm ²	38.8	33.6	33.9	-	38.4	-	41.9	35.9	33.3	-	-	-
Stability (P), mm	73	67	74	-	63	-	64	62	71	-	-	-
Distensibility (L), mm	145	141	118	-	171	-	183	165	135	-	-	-
Configuration ratio (P/L)	0.50	0.48	0.63	-	0.37	-	0.35	0.38	0.53	-	-	-
MIXOGRAM												
Peak time, min	2.7	2.6	2.5	-	2.7	-	2.6	2.7	2.7	-	-	-
100g BAKING TEST												
Loaf volume, cm ³	917	877	841	-	1035	-	977	879	822	-	-	-
Evaluation (see page 60)	0	0	0	-	0	-	0	0	0	-	-	-

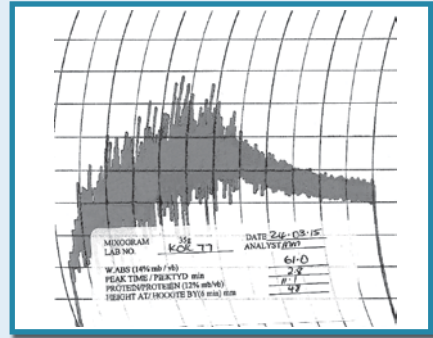
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

10

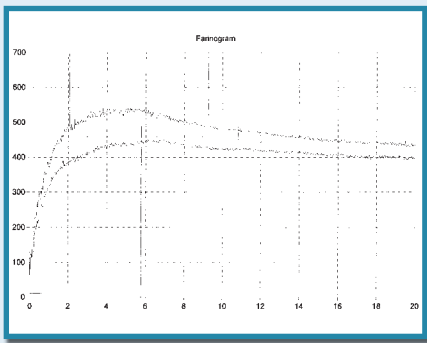


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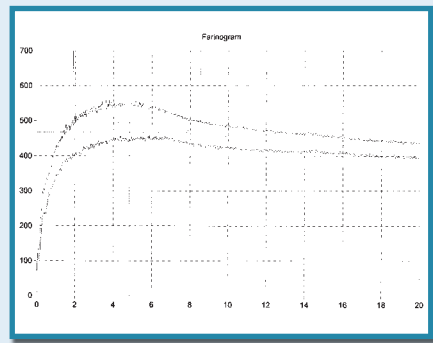


FARINOGRAM

10

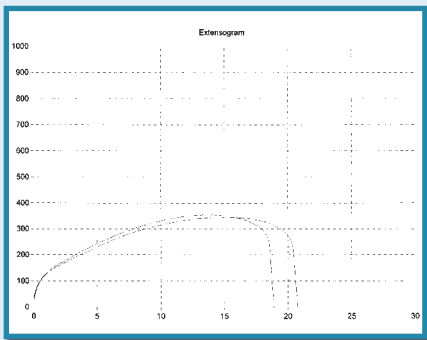


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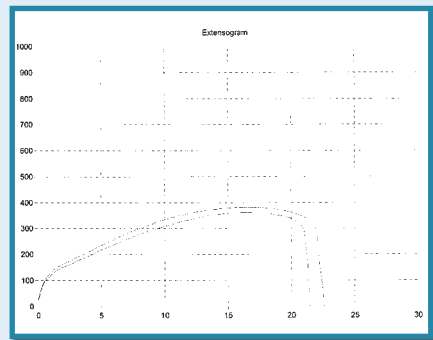


EXTENSOGRAM

10

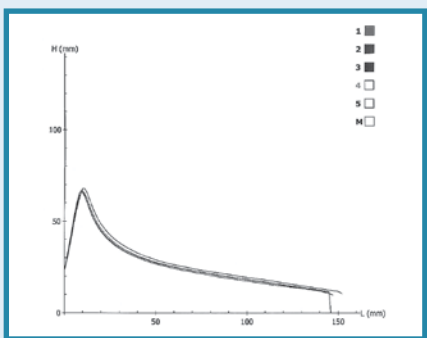


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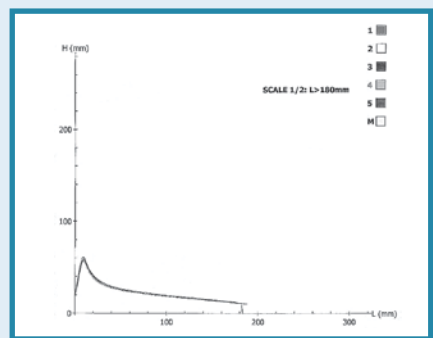


ALVEOGRAM

10



11



South African Quality data per production region

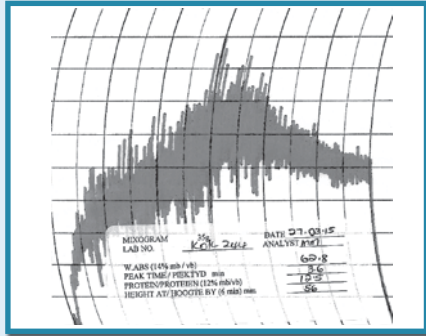
IRRIGATION WHEAT

PRODUCTION REGION	(12) North-West Western Region				(14) North-West Southern Region							
WHEAT												
	ave	min	max	stdev	ave	min	max	stdev				
Protein (12% mb), %	12.9	10.7	15.6	2.15	12.8	11.5	13.5	0.87				
Falling number, sec	373	348	397	25.33	373	354	393	16.66				
1000 Kernel mass (13% mb), g	33.6	32.5	34.3	0.77	38.6	37.4	39.6	0.90				
Hectolitre mass (dirty), kg/hl	81.4	81.1	81.6	0.22	83.0	82.7	83.5	0.36				
Screenings (<1.8mm), %	1.65	0.63	2.65	1.02	1.00	0.72	1.44	0.31				
Total damaged kernels, %	0.29	0.12	0.44	0.13	0.62	0.42	0.88	0.20				
Combined deviations, %	3.17	1.75	4.53	1.39	2.10	1.84	2.41	0.29				
Number of samples	4				4							
CULTIVARS												
	SST 835				SST 843							
cultivars	60.0				31.0							
with highest %	SST 843				SST 835							
occurrence	29.5				21.5							
	SST 875				SST 884							
	10.5				21.3							
					PAN 3471							
					13.0							
					SST 88							
					4.0							
Number of samples	4				4							
MIXOGRAM (Quadromat)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	3.7	2.6	5.5	1.28	3.0	2.7	3.3	0.26				
Tail height (6 min), mm	53	46	62	7.39	50	46	52	2.87				
Number of samples	4				4							
COMPOSITE SAMPLES												
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
BÜHLER EXTRACTION, %	72.1	-	-	-	-	-	74.0	-	-	-	-	-
FLOUR												
Protein (12% mb), %	13.9	-	-	-	-	-	12.4	-	-	-	-	-
Ash (db), %	0.56	-	-	-	-	-	0.58	-	-	-	-	-
Colour, KJ (wet)	-3.4	-	-	-	-	-	-3.5	-	-	-	-	-
Colour, Minolta CM5 (dry)												
L*	94.02	-	-	-	-	-	93.75	-	-	-	-	-
a*	0.48	-	-	-	-	-	0.56	-	-	-	-	-
b*	9.34	-	-	-	-	-	9.69	-	-	-	-	-
RVA												
Peak Viscosity, cP	2513	-	-	-	-	-	2296	-	-	-	-	-
Minimum viscosity (Through), cP	1784	-	-	-	-	-	1724	-	-	-	-	-
Final Viscosity, cP	2874	-	-	-	-	-	2514	-	-	-	-	-
Peak Time, min	7.00	-	-	-	-	-	7.00	-	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	35.5	-	-	-	-	-	33.6	-	-	-	-	-
Dry gluten (14% mb), %	12.7	-	-	-	-	-	11.6	-	-	-	-	-
Gluten Index	96	-	-	-	-	-	87	-	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	60.6	-	-	-	-	-	60.9	-	-	-	-	-
Development time, min	13.2	-	-	-	-	-	6.3	-	-	-	-	-
Stability, min	17.0	-	-	-	-	-	9.2	-	-	-	-	-
Mixing tolerance index, BU	9	-	-	-	-	-	35	-	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	201	-	-	-	-	-	133	-	-	-	-	-
Maximum height, BU	566	-	-	-	-	-	419	-	-	-	-	-
Extensibility, mm	267	-	-	-	-	-	232	-	-	-	-	-
ALVEOGRAM												
Strength (S), cm ²	70.9	-	-	-	-	-	53.9	-	-	-	-	-
Stability (P), mm	84	-	-	-	-	-	79	-	-	-	-	-
Distensibility (L), mm	168	-	-	-	-	-	173	-	-	-	-	-
Configuration ratio (P/L)	0.50	-	-	-	-	-	0.46	-	-	-	-	-
MIXOGRAM												
Peak time, min	4.1	-	-	-	-	-	3.0	-	-	-	-	-
100g BAKING TEST												
Loaf volume, cm ³	1027	-	-	-	-	-	983	-	-	-	-	-
Evaluation (see page 60)	1	-	-	-	-	-	0	-	-	-	-	-

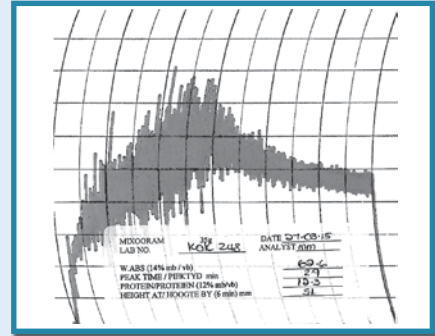
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

12

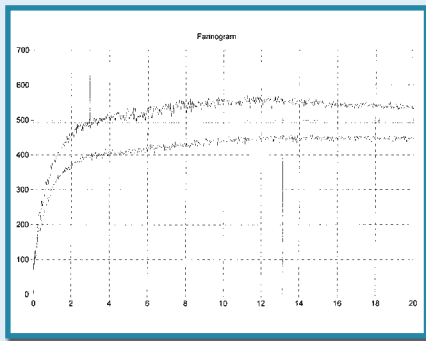


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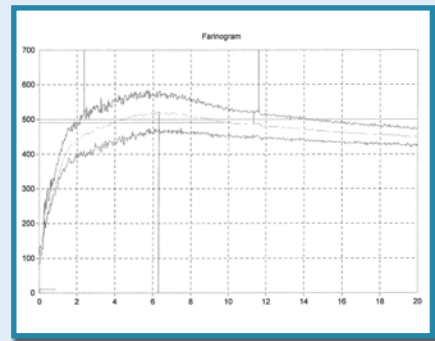


FARINOGRAM

12

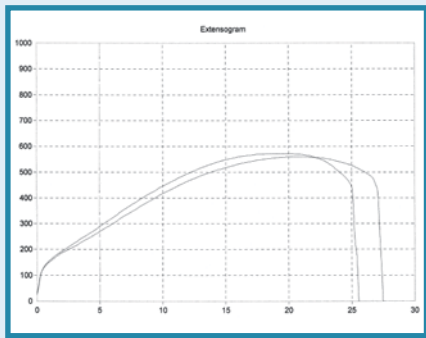


14

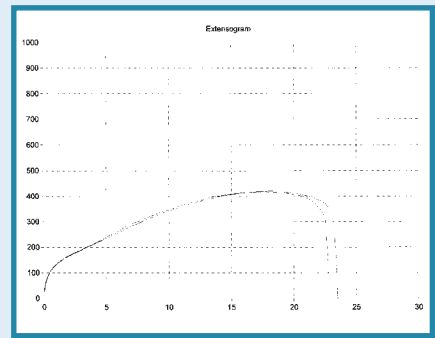


EXTENSOGRAM

12

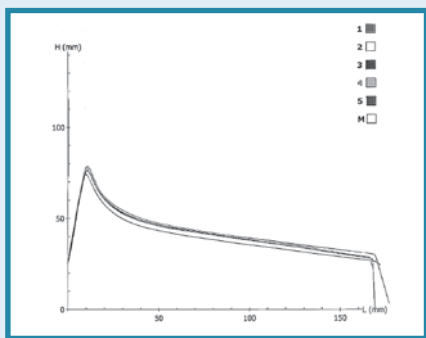


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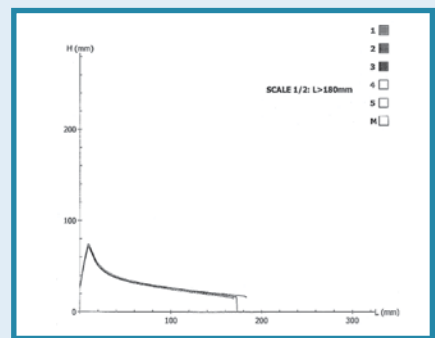


ALVEOGRAM

12



14



South African Quality data per production region

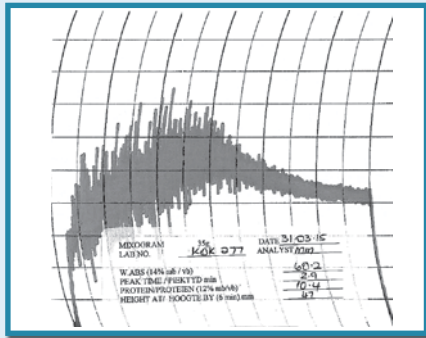
IRRIGATION WHEAT

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), %	11.9	11.0	12.7	1.20	14.3	14.1	14.4	0.21				
Falling number, sec	387	372	401	20.51	376	374	378	2.83				
1000 Kernel mass (13% mb), g	36.4	35.9	36.8	0.64	36.3	35.8	36.7	0.64				
Hectolitre mass (dirty), kg/hl	83.1	82.6	83.5	0.64	79.9	79.6	80.2	0.42				
Screenings (<1.8mm), %	1.60	1.54	1.65	0.08	0.78	0.74	0.81	0.05				
Total damaged kernels, %	0.40	0.32	0.48	0.11	0.77	0.50	1.04	0.38				
Combined deviations, %	2.23	2.12	2.33	0.15	2.12	1.73	2.50	0.54				
Number of samples	2				2							
CULTIVARS												
		SST 843	70.5			SST 843	39.0					
cultivars with highest % occurrence		SST 835	22.5			SST 835	25.0					
		SST 884	7.0			PAN 3471	18.0					
						Duzi	11.5					
						SST 884	6.5					
Number of samples	2				2							
MIXOGRAM (Quadromat)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	3.4	2.9	3.8	0.64	4.0	3.3	4.7	0.99				
Tail height (6 min), mm	52	47	57	7.07	59	56	62	4.24				
Number of samples	2				2							
	COMPOSITE SAMPLES											
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
BÜHLER EXTRACTION, %	73.7	-	-	-	-	-	72.4	-	-	-	-	-
FLOUR												
Protein (12% mb), %	11.1	-	-	-	-	-	13.2	-	-	-	-	-
Ash (db), %	0.60	-	-	-	-	-	0.59	-	-	-	-	-
Colour, KJ (wet)	-3.5	-	-	-	-	-	-3.1	-	-	-	-	-
Colour, Minolta CM5 (dry)												
L*	93.81	-	-	-	-	-	93.47	-	-	-	-	-
a*	0.43	-	-	-	-	-	0.50	-	-	-	-	-
b*	9.01	-	-	-	-	-	9.25	-	-	-	-	-
RVA												
Peak Viscosity, cP	2617	-	-	-	-	-	2113	-	-	-	-	-
Minimum viscosity (Through), cP	1917	-	-	-	-	-	1560	-	-	-	-	-
Final Viscosity, cP	2953	-	-	-	-	-	2273	-	-	-	-	-
Peak Time, min	7.00	-	-	-	-	-	7.00	-	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	29.0	-	-	-	-	-	33.5	-	-	-	-	-
Dry gluten (14% mb), %	9.8	-	-	-	-	-	12.1	-	-	-	-	-
Gluten Index	93	-	-	-	-	-	95	-	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	58.2	-	-	-	-	-	60.9	-	-	-	-	-
Development time, min	7.2	-	-	-	-	-	10.7	-	-	-	-	-
Stability, min	10.7	-	-	-	-	-	17.7	-	-	-	-	-
Mixing tolerance index, BU	32	-	-	-	-	-	16	-	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	128	-	-	-	-	-	157	-	-	-	-	-
Maximum height, BU	463	-	-	-	-	-	516	-	-	-	-	-
Extensibility, mm	205	-	-	-	-	-	230	-	-	-	-	-
ALVEOGRAM												
Strength (S), cm ²	43.7	-	-	-	-	-	63.0	-	-	-	-	-
Stability (P), mm	69	-	-	-	-	-	88	-	-	-	-	-
Distensibility (L), mm	158	-	-	-	-	-	144	-	-	-	-	-
Configuration ratio (P/L)	0.44	-	-	-	-	-	0.61	-	-	-	-	-
MIXOGRAM												
Peak time, min	3.0	-	-	-	-	-	3.8	-	-	-	-	-
100g BAKING TEST												
Loaf volume, cm ³	997	-	-	-	-	-	932	-	-	-	-	-
Evaluation (see page 60)	0	-	-	-	-	-	2	-	-	-	-	-

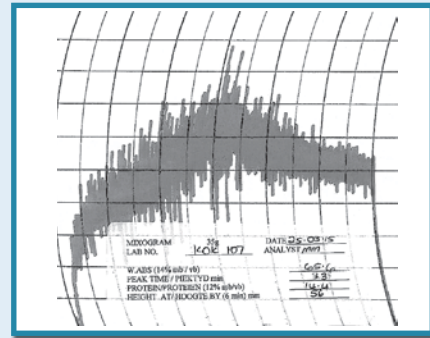
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

17

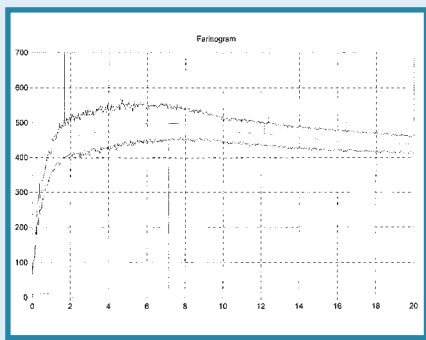


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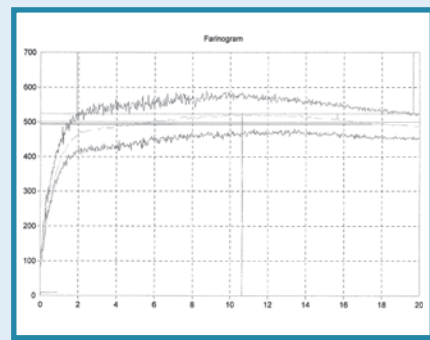


FARINOGRAM

17

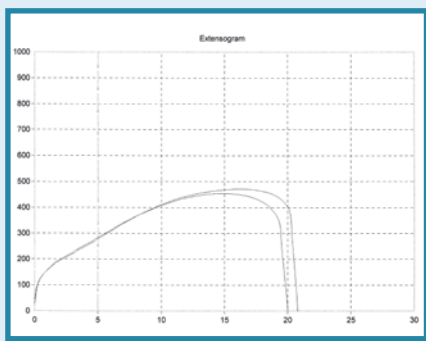


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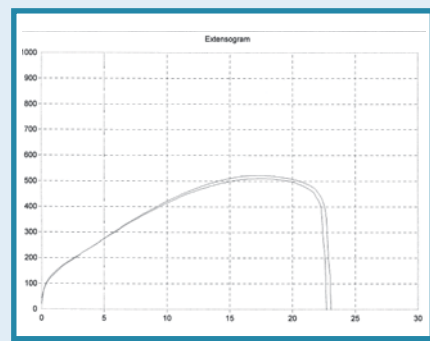


EXTENSOGRAM

17

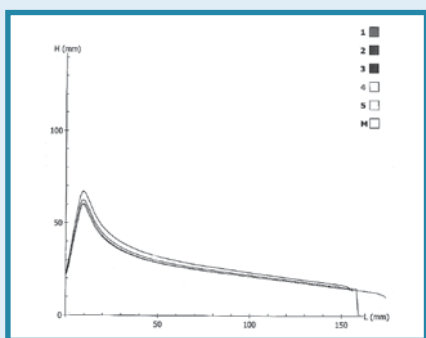


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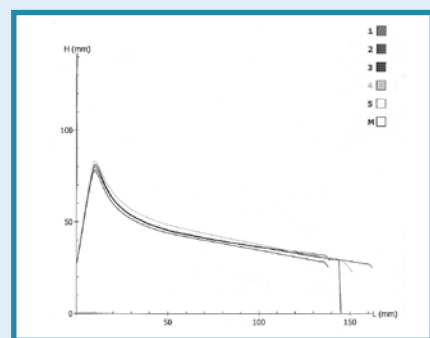


ALVEOGRAM

17



18



South African Quality data per production region

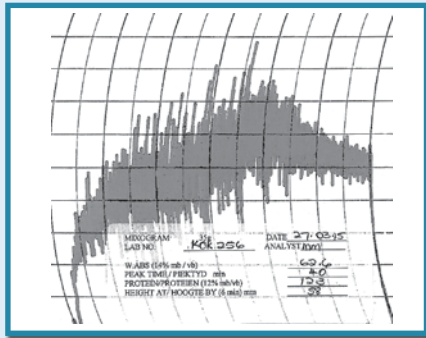
IRRIGATION WHEAT

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), %	12.8	12.7	12.9	0.14	12.1	9.9	14.5	1.33				
Falling number, sec	386	384	388	2.83	369	284	520	54.07				
1000 Kernel mass (13% mb), g	37.8	37.1	38.5	0.99	39.6	34.3	43.1	2.33				
Hectolitre mass (dirty), kg/hl	82.9	82.7	83.0	0.21	80.0	78.1	83.2	1.69				
Screenings (<1.8mm), %	1.16	1.06	1.26	0.14	0.40	0.11	0.91	0.25				
Total damaged kernels, %	0.31	0.26	0.36	0.07	1.00	0.18	2.50	0.71				
Combined deviations, %	2.03	1.76	2.30	0.38	2.00	1.02	3.23	0.72				
Number of samples	2				15							
CULTIVARS												
		SST 843	73.0			Duzi	34.9					
cultivars		SST 835	17.0			SST 835	22.4					
with highest %		SST 884	7.0			SST 843	17.3					
occurrence		PAN 3471	3.0			SST 884	13.5					
						SST 875	5.3					
Number of samples	2				15							
MIXOGRAM (Quadromat)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	3.6	3.1	4.0	0.64	3.5	2.3	5.2	0.69				
Tail height (6 min), mm	56	53	58	3.54	51	44	69	6.62				
Number of samples	2				15							
	COMPOSITE SAMPLES											
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
BÜHLER EXTRACTION, %	73.9	-	-	-	-	-	74.2	75.6	-	-	-	-
FLOUR												
Protein (12% mb), %	12.2	-	-	-	-	-	12.1	10.3	-	-	-	-
Ash (db), %	0.59	-	-	-	-	-	0.59	0.62	-	-	-	-
Colour, KJ (wet)	-3.7	-	-	-	-	-	-3.2	-3.1	-	-	-	-
Colour, Minolta CM5 (dry)												
L*	93.80	-	-	-	-	-	93.65	93.51	-	-	-	-
a*	0.50	-	-	-	-	-	0.50	0.38	-	-	-	-
b*	9.00	-	-	-	-	-	9.26	9.65	-	-	-	-
RVA												
Peak Viscosity, cP	2346	-	-	-	-	-	2341	2302	-	-	-	-
Minimum viscosity (Through), cP	1740	-	-	-	-	-	1722	1942	-	-	-	-
Final Viscosity, cP	2598	-	-	-	-	-	2613	2535	-	-	-	-
Peak Time, min	7.00	-	-	-	-	-	7.00	6.87	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	30.9	-	-	-	-	-	31.7	27.7	-	-	-	-
Dry gluten (14% mb), %	11.0	-	-	-	-	-	10.4	9.4	-	-	-	-
Gluten Index	92	-	-	-	-	-	91	89	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	60.8	-	-	-	-	-	60.2	56.4	-	-	-	-
Development time, min	8.3	-	-	-	-	-	8.4	5.2	-	-	-	-
Stability, min	10.9	-	-	-	-	-	15.4	6.4	-	-	-	-
Mixing tolerance index, BU	34	-	-	-	-	-	21	49	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	148	-	-	-	-	-	140	93	-	-	-	-
Maximum height, BU	477	-	-	-	-	-	448	324	-	-	-	-
Extensibility, mm	234	-	-	-	-	-	230	209	-	-	-	-
ALVEOGRAM												
Strength (S), cm ²	57.7	-	-	-	-	-	54.2	31.1	-	-	-	-
Stability (P), mm	86	-	-	-	-	-	79	49	-	-	-	-
Distensibility (L), mm	147	-	-	-	-	-	162	187	-	-	-	-
Configuration ratio (P/L)	0.59	-	-	-	-	-	0.49	0.26	-	-	-	-
MIXOGRAM												
Peak time, min	3.3	-	-	-	-	-	3.4	2.8	-	-	-	-
100g BAKING TEST												
Loaf volume, cm ³	910	-	-	-	-	-	924	942	-	-	-	-
Evaluation (see page 60)	1	-	-	-	-	-	0	0	-	-	-	-

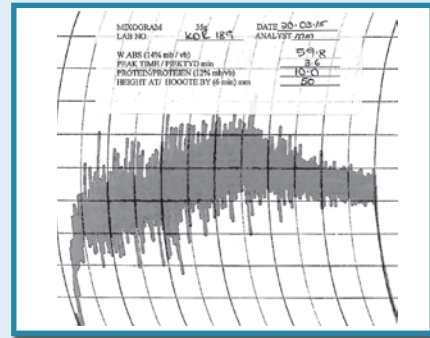
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

19

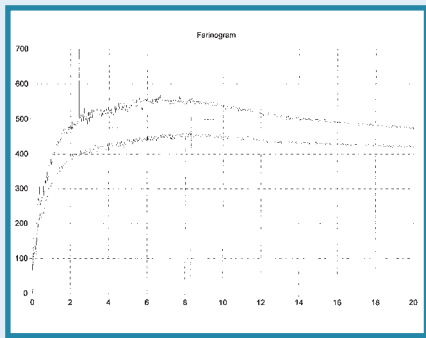


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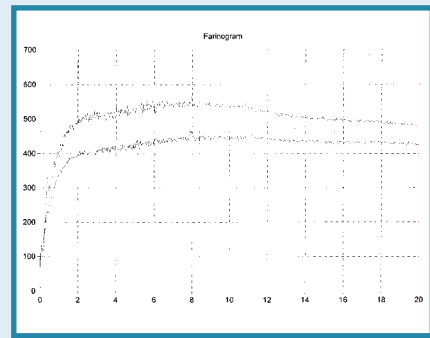


FARINOGRAM

19

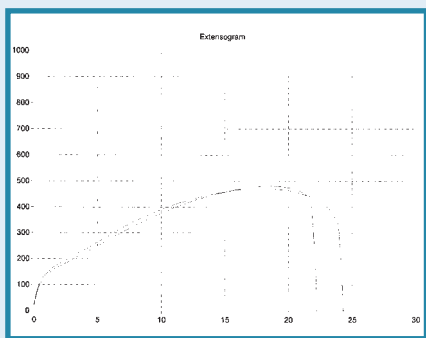


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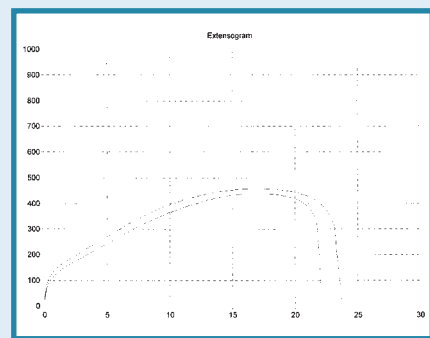


EXTENSOGRAM

19

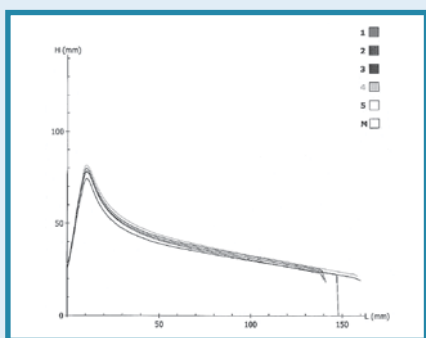


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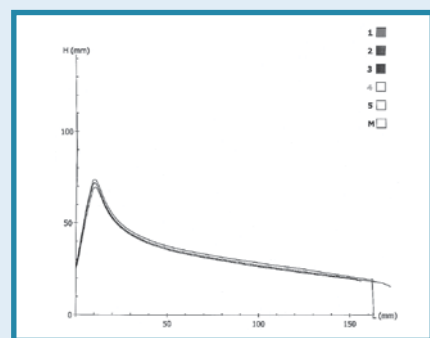


ALVEOGRAM

19



20



South African Quality data per production region

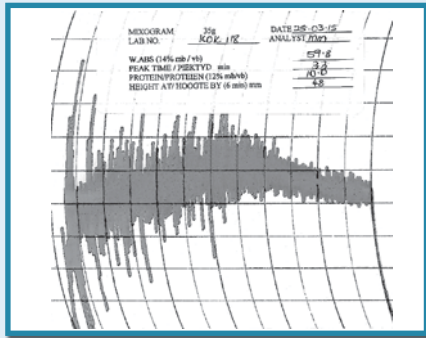
SUMMER RAINFALL AND IRRIGATION WHEAT

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), %	12.3	-	-	-	13.4	11.7	14.7	1.53				
Falling number, sec	324	-	-	-	363	346	374	14.93				
1000 Kernel mass (13% mb), g	26.0	-	-	-	34.8	32.1	36.6	2.40				
Hectolitre mass (dirty), kg/hl	73.0	-	-	-	77.9	75.3	80.1	2.42				
Screenings (<1.8mm), %	6.58	-	-	-	1.67	1.12	1.98	0.48				
Total damaged kernels, %	0.50	-	-	-	0.37	0.28	0.46	0.09				
Combined deviations, %	7.76	-	-	-	2.79	2.58	3.18	0.34				
Number of samples	1				3							
CULTIVARS												
		SST 875	85.0			SST 387	27.0					
cultivars with highest % occurrence		SST 387	15.0			PAN 3120	25.7					
						SST 875	23.7					
						Buffels	14.0					
						SST 843	5.0					
Number of samples	1				3							
MIXOGRAM (Quadromat)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	3.3	-	-	-	3.0	2.7	3.3	0.31				
Tail height (6 min), mm	48	-	-	-	53	52	54	1.00				
Number of samples	1				3							
	COMPOSITE SAMPLES											
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
BÜHLER EXTRACTION, %	-	-	-	-	-	70.9	73.2	-	-	-	-	-
FLOUR												
Protein (12% mb), %	-	-	-	-	-	10.9	13.5	-	-	-	-	-
Ash (db), %	-	-	-	-	-	0.65	0.59	-	-	-	-	-
Colour, KJ (wet)	-	-	-	-	-	-2.2	-2.9	-	-	-	-	-
Colour, Minolta CM5 (dry)												
L*	-	-	-	-	-	92.98	93.27	-	-	-	-	-
a*	-	-	-	-	-	0.56	0.58	-	-	-	-	-
b*	-	-	-	-	-	9.78	9.58	-	-	-	-	-
RVA												
Peak Viscosity, cP	-	-	-	-	-	2810	2090	-	-	-	-	-
Minimum viscosity (Through), cP	-	-	-	-	-	2166	1548	-	-	-	-	-
Final Viscosity, cP	-	-	-	-	-	3127	2277	-	-	-	-	-
Peak Time, min	-	-	-	-	-	7.00	7.00	-	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	-	-	-	-	-	27.2	37.7	-	-	-	-	-
Dry gluten (14% mb), %	-	-	-	-	-	9.2	12.4	-	-	-	-	-
Gluten Index	-	-	-	-	-	94	85	-	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	-	-	-	-	-	58.0	63.5	-	-	-	-	-
Development time, min	-	-	-	-	-	4.3	6.4	-	-	-	-	-
Stability, min	-	-	-	-	-	6.7	9.1	-	-	-	-	-
Mixing tolerance index, BU	-	-	-	-	-	39	31	-	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	-	-	-	-	-	74	134	-	-	-	-	-
Maximum height, BU	-	-	-	-	-	238	395	-	-	-	-	-
Extensibility, mm	-	-	-	-	-	219	249	-	-	-	-	-
ALVEOGRAM												
Strength (S), cm ²	-	-	-	-	-	26.9	50.8	-	-	-	-	-
Stability (P), mm	-	-	-	-	-	50	81	-	-	-	-	-
Distensibility (L), mm	-	-	-	-	-	163	159	-	-	-	-	-
Configuration ratio (P/L)	-	-	-	-	-	0.31	0.51	-	-	-	-	-
MIXOGRAM												
Peak time, min	-	-	-	-	-	3.1	2.5	-	-	-	-	-
100g BAKING TEST												
Loaf volume, cm ³	-	-	-	-	-	1132	1006	-	-	-	-	-
Evaluation (see page 60)	-	-	-	-	-	0	1	-	-	-	-	-

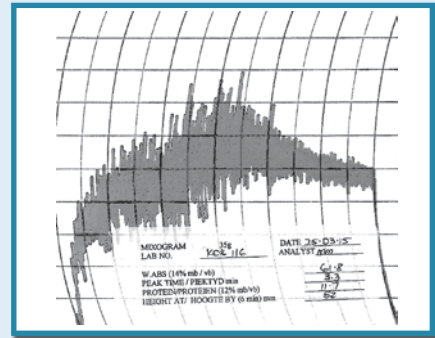
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

21

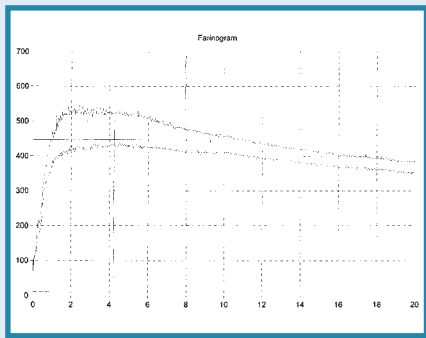


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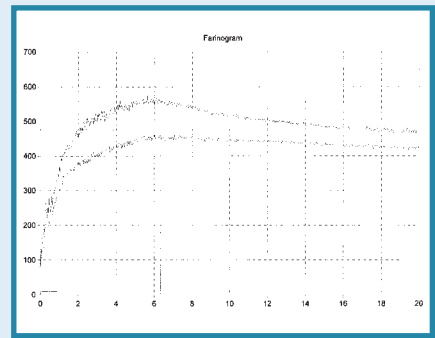


FARINOGRAM

21

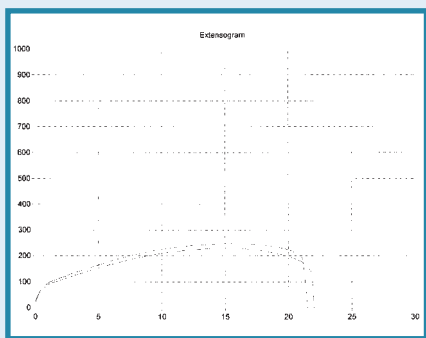


22

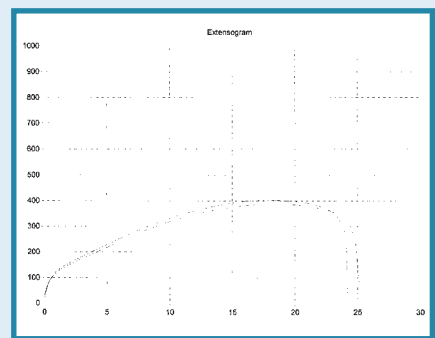


EXTENSOGRAM

21

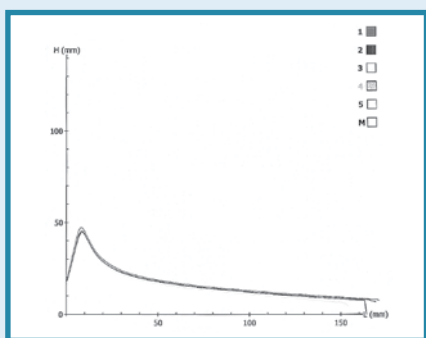


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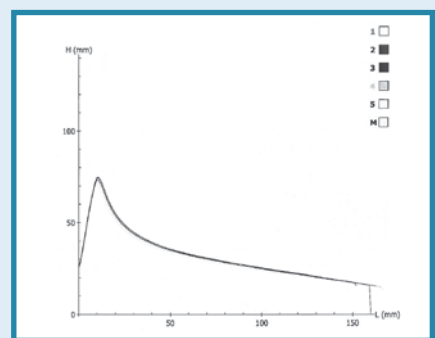


ALVEOGRAM

21



22



South African Quality data per production region

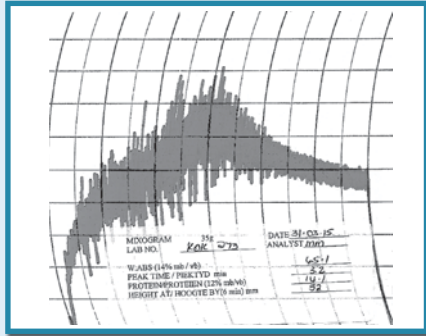
SUMMER RAINFALL AND IRRIGATION WHEAT

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), %	13.3	9.5	16.0	1.65	12.4	10.6	14.2	1.08				
Falling number, sec	333	263	390	36.59	366	291	424	30.65				
1000 Kernel mass (13% mb), g	34.8	25.6	44.8	5.46	35.9	26.6	46.0	5.32				
Hectolitre mass (dirty), kg/hl	78.1	71.5	80.7	2.73	79.4	70.5	82.8	2.89				
Screenings (<1.8mm), %	1.86	1.14	3.77	0.64	1.84	0.60	4.0	0.95				
Total damaged kernels, %	0.38	0.20	0.78	0.17	0.53	0.06	1.90	0.44				
Combined deviations, %	3.02	2.04	6.15	0.99	2.93	1.40	5.20	1.06				
Number of samples	15				21							
CULTIVARS												
	PAN 3120		32.5		SST 387		17.0					
cultivars with highest % occurrence	SST 387		23.9		SST 843		13.8					
	SST 835		14.3		PAN 3471		12.1					
	SST 843		9.0		SST 835		10.9					
	PAN 3471		7.5		SST 88		7.5					
Number of samples	15				21							
MIXOGRAM (Quadromat)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	3.2	2.5	4.2	0.44	3.2	1.7	4.4	0.55				
Tail height (6 min), mm	52	43	56	3.50	49	42	59	3.74				
Number of samples	15				21							
COMPOSITE SAMPLES												
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
BÜHLER EXTRACTION, %	72.2	72.8	71.9	75.6	-	-	73.6	73.1	73.9	-	74.0	-
FLOUR												
Protein (12% mb), %	11.8	11.8	12.1	8.5	-	-	12.5	10.3	10.2	-	11.7	-
Ash (db), %	0.58	0.57	0.60	0.56	-	-	0.56	0.59	0.59	-	0.64	-
Colour, KJ (wet)	-3.2	-3.4	-3.2	-3.5	-	-	-3.2	-3.1	-3.0	-	-2.9	-
Colour, Minolta CM5 (dry)												
L*	93.49	93.65	93.59	94.12	-	-	93.57	93.44	93.75	-	93.49	-
a*	0.52	0.50	0.46	0.45	-	-	0.46	0.51	0.44	-	0.44	-
b*	9.85	9.98	9.98	8.21	-	-	9.98	10.23	10.50	-	9.42	-
RVA												
Peak Viscosity, cP	2240	2196	2234	2446	-	-	2415	2154	2225	-	2347	-
Minimum viscosity (Through), cP	1734	1764	1869	2050	-	-	1889	1775	1748	-	1902	-
Final Viscosity, cP	2421	2466	2421	2799	-	-	2621	2397	2519	-	2634	-
Peak Time, min	7.00	6.93	7.00	6.80	-	-	7.00	6.93	7.00	-	7.00	-
GLUTEN												
Wet gluten (14% mb), %	33.9	31.8	32.9	22.5	-	-	33.3	26.3	26.4	-	33.9	-
Dry gluten (14% mb), %	11.5	10.3	10.7	7.2	-	-	10.9	9.0	8.9	-	11.4	-
Gluten Index	85	81	80	85	-	-	78	87	89	-	83	-
FARINOGRAM												
Water absorption (14% mb), %	60.8	60.0	61.2	55.9	-	-	60.6	57.4	58.3	-	61.0	-
Development time, min	6.0	6.0	6.0	2.0	-	-	6.0	2.4	4.5	-	6.4	-
Stability, min	11.2	9.0	9.7	5.6	-	-	8.4	6.9	6.7	-	7.2	-
Mixing tolerance index, BU	21	29	26	43	-	-	36	27	40	-	43	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	139	107	111	66	-	-	120	96	85	-	101	-
Maximum height, BU	428	357	372	286	-	-	374	390	338	-	341	-
Extensibility, mm	236	218	218	164	-	-	231	178	180	-	213	-
ALVEOGRAM												
Strength (S), cm ²	44.0	40.3	44.3	25.2	-	-	39.1	32.7	32.9	-	41.5	-
Stability (P), mm	72	70	80	59	-	-	71	67	68	-	72	-
Distensibility (L), mm	148	161	142	122	-	-	142	125	134	-	154	-
Configuration ratio (P/L)	0.49	0.43	0.56	0.48	-	-	0.50	0.54	0.51	-	0.47	-
MIXOGRAM												
Peak time, min	2.6	2.5	2.6	2.4	-	-	2.4	2.8	2.6	-	2.0	-
100g BAKING TEST												
Loaf volume, cm ³	1032	1013	1026	779	-	-	1041	890	894	-	991	-
Evaluation (see page 60)	0	0	0	0	-	-	0	0	0	-	0	-

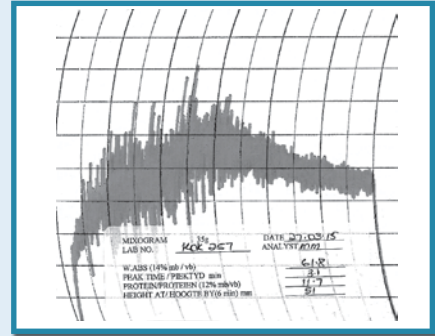
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

23

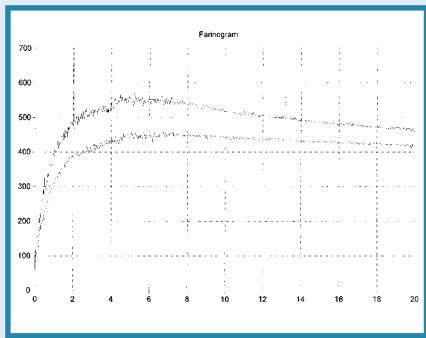


24

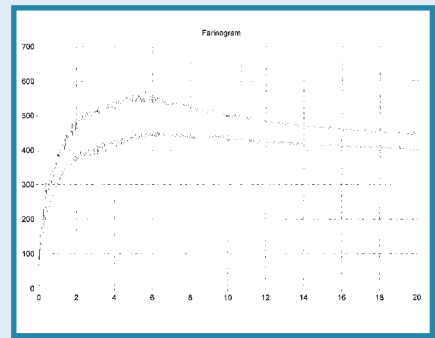


FARINOGRAM

23

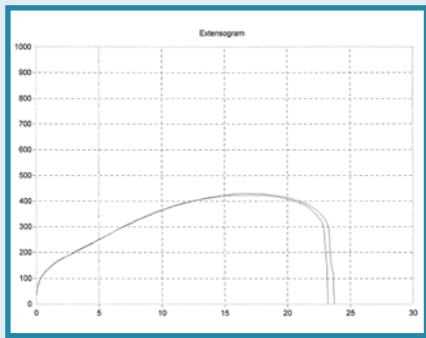


24

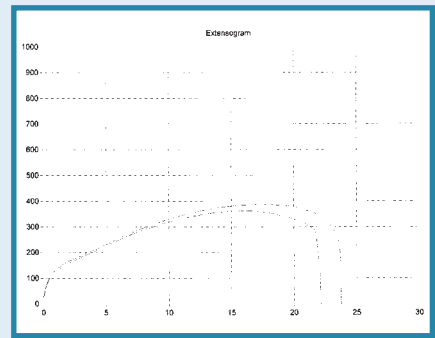


EXTENSOGRAM

23

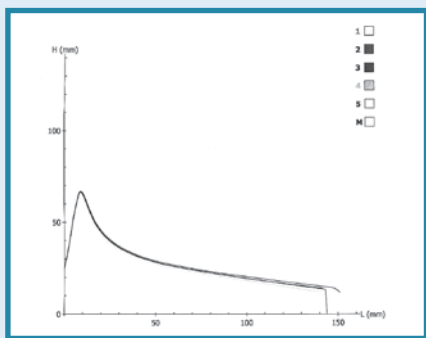


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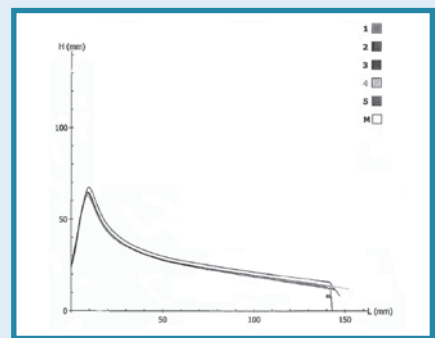


ALVEOGRAM

23



24



South African Quality data per production region

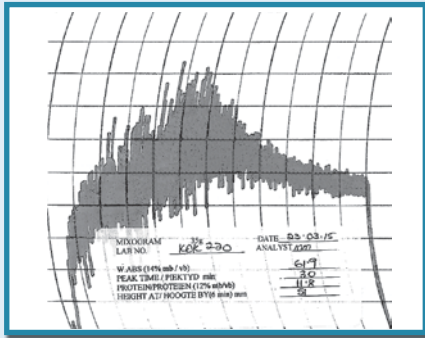
SUMMER RAINFALL AND IRRIGATION WHEAT

PRODUCTION REGION	(25) Free State South-Western Region				(26) Free State South-Eastern Region							
WHEAT												
	ave	min	max	stdev	ave	min	max	stdev				
Protein (12% mb), %	12.0	9.8	14.4	1.01	11.5	9.8	12.4	1.02				
Falling number, sec	356	271	418	40.29	364	319	403	33.88				
1000 Kernel mass (13% mb), g	38.3	31.9	47.5	3.94	38.5	33.2	41.8	3.04				
Hectolitre mass (dirty), kg/hl	79.5	74.7	84.5	2.86	79.5	77.0	80.9	1.44				
Screenings (<1.8mm), %	1.45	0.49	3.50	0.74	1.46	0.50	3.04	1.07				
Total damaged kernels, %	0.81	0.08	4.78	1.06	0.45	0.18	0.90	0.34				
Combined deviations, %	2.88	0.88	6.95	1.52	2.48	0.78	5.00	1.49				
Number of samples	19				6							
CULTIVARS												
	SST 835 21.2				SST 875 27.2							
cultivars	Elands 16.8				PAN 3161 23.7							
with highest %	SST 356 12.5				SST 835 18.7							
occurrence	PAN 3161 9.7				Elands 10.0							
	Matlabas 8.8				Gariep 8.8							
Number of samples	19				6							
MIXOGRAM (Quadromat)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	3.1	2.1	5.3	0.65	3.3	2.3	4.2	0.79				
Tail height (6 min), mm	51	44	59	4.27	52	46	59	5.24				
Number of samples	19				6							
COMPOSITE SAMPLES												
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
BÜHLER EXTRACTION, %	73.7	72.9	73.3	74.9	72.5	-	74.6	-	74.6	-	-	-
FLOUR												
Protein (12% mb), %	11.7	10.6	9.1	9.4	10.4	-	11.2	-	9.5	-	-	-
Ash (db), %	0.56	0.56	0.51	0.58	0.58	-	0.58	-	0.54	-	-	-
Colour, KJ (wet)	-3.2	-3.3	-3.5	-3.7	-3.3	-	-3.4	-	-2.9	-	-	-
Colour, Minolta CM5 (dry)												
L*	93.42	93.66	94.30	94.09	93.79	-	93.65	-	93.82	-	-	-
a*	0.44	0.39	0.22	0.38	0.43	-	0.43	-	0.28	-	-	-
b*	9.78	10.09	8.32	9.19	9.15	-	9.72	-	9.93	-	-	-
RVA												
Peak Viscosity, cP	2114	2254	2661	2385	2170	-	2194	-	2440	-	-	-
Minimum viscosity (Through), cP	1619	1678	1894	1707	1631	-	1665	-	1793	-	-	-
Final Viscosity, cP	2310	2597	3130	2742	2457	-	2449	-	2769	-	-	-
Peak Time, min	7.00	7.00	7.00	7.00	7.00	-	7.00	-	7.00	-	-	-
GLUTEN												
Wet gluten (14% mb), %	32.4	31.5	20.9	25.1	29.1	-	30.9	-	24.5	-	-	-
Dry gluten (14% mb), %	11.0	10.4	7.2	8.2	10.0	-	10.3	-	8.6	-	-	-
Gluten Index	83	86	96	84	78	-	78	-	97	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	61.8	60.2	57.4	58.3	59.0	-	61.2	-	59.1	-	-	-
Development time, min	6.0	5.3	1.7	4.5	5.3	-	4.8	-	2.2	-	-	-
Stability, min	9.4	8.1	7.5	6.7	6.6	-	5.5	-	11.8	-	-	-
Mixing tolerance index, BU	24	31	31	43	45	-	41	-	20	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	119	83	87	80	80	-	89	-	104	-	-	-
Maximum height, BU	401	330	381	348	337	-	309	-	448	-	-	-
Extensibility, mm	216	182	170	165	174	-	206	-	171	-	-	-
ALVEOGRAM												
Strength (S), cm ²	32.6	36.7	32.6	29.2	35.9	-	37.6	-	43.3	-	-	-
Stability (P), mm	55	80	86	74	74	-	76	-	109	-	-	-
Distensibility (L), mm	151	121	71	97	126	-	128	-	81	-	-	-
Configuration ratio (P/L)	0.36	0.66	1.21	0.76	0.59	-	0.59	-	1.35	-	-	-
MIXOGRAM												
Peak time, min	2.6	2.3	3.9	2.9	2.3	-	2.3	-	3.2	-	-	-
100g BAKING TEST												
Loaf volume, cm ³	859	830	744	747	825	-	983	-	725	-	-	-
Evaluation (see page 60)	1	0	0	1	0	-	0	-	2	-	-	-

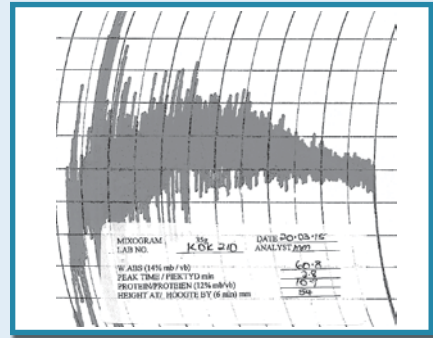
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

25

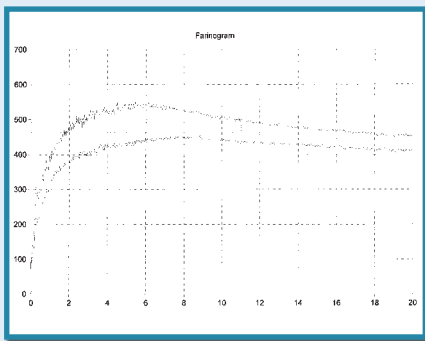


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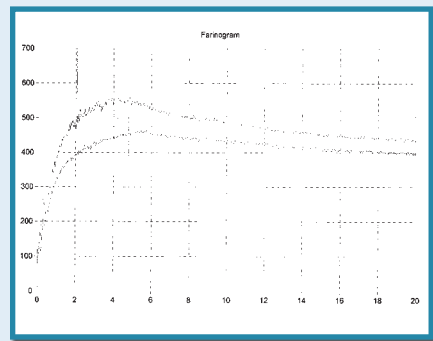


FARINOGRAM

25

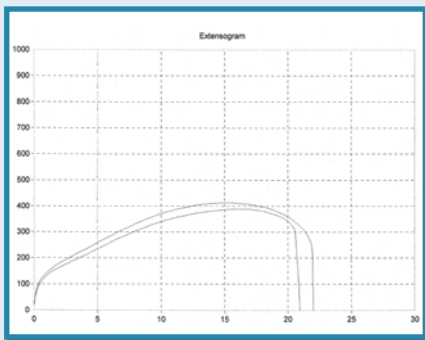


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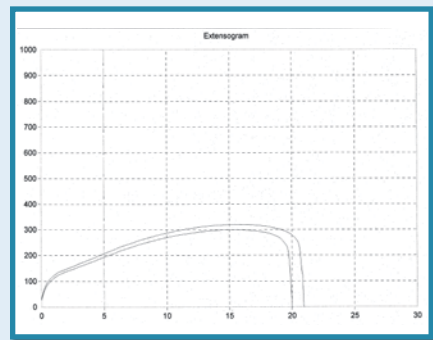


EXTENSOGRAM

25

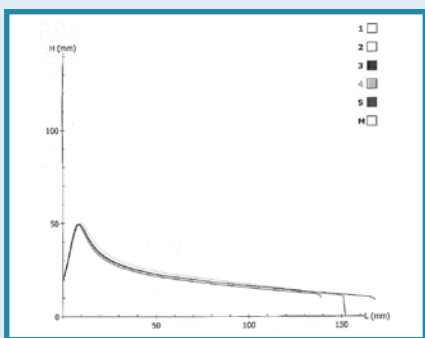


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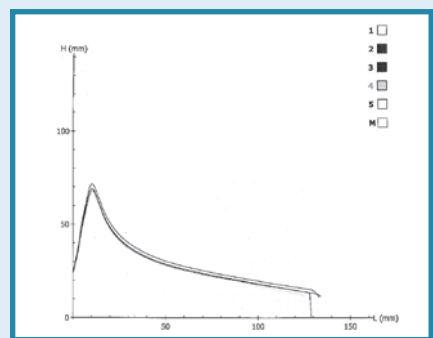


ALVEOGRAM

25



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South African Quality data per production region

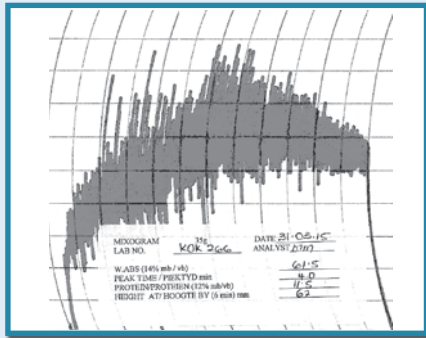
SUMMER RAINFALL AND IRRIGATION WHEAT

PRODUCTION REGION	(27) Free State Northern Region				(28) Free State Eastern Region							
WHEAT												
	ave	min	max	stdev	ave	min	max	stdev				
Protein (12% mb), %	12.8	12.6	13.0	0.21	12.3	11.2	13.6	0.72				
Falling number, sec	352	325	377	26.06	340	241	418	49.23				
1000 Kernel mass (13% mb), g	37.2	36.0	39.2	1.72	38.6	33.0	44.4	3.12				
Hectolitre mass (dirty), kg/hl	78.4	77.0	79.8	1.40	80.4	77.7	83.7	2.08				
Screenings (<1.8mm), %	0.93	0.41	1.30	0.46	0.65	0.20	1.54	0.44				
Total damaged kernels, %	0.63	0.36	1.08	0.39	0.69	0.20	1.68	0.41				
Combined deviations, %	2.15	1.85	2.45	0.30	1.88	0.53	4.27	1.27				
Number of samples	3				15							
CULTIVARS												
	Elands 35.0				PAN 3161 17.5							
cultivars with highest % occurrence	PAN 3161 26.0				Elands 17.2							
	SST 356 19.7				Matlabas 14.9							
	Gariep 8.7				SST 835 12.4							
	SST 056 8.3				SST 356 10.8							
Number of samples	3				15							
MIXOGRAM (Quadromat)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	3.8	3.2	4.3	0.57	3.1	2.7	3.5	0.24				
Tail height (6 min), mm	59	54	62	4.36	53	47	56	2.42				
Number of samples	3				15							
COMPOSITE SAMPLES												
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
BÜHLER EXTRACTION, %	74.0	-	-	-	-	-	72.9	72.5	-	-	72.6	-
FLOUR												
Protein (12% mb), %	11.8	-	-	-	-	-	11.4	10.2	-	-	10.1	-
Ash (db), %	0.56	-	-	-	-	-	0.57	0.53	-	-	0.61	-
Colour, KJ (wet)	-2.7	-	-	-	-	-	-3.0	-3.5	-	-	-3.0	-
Colour, Minolta CM5 (dry)												
L*	93.16	-	-	-	-	-	93.50	93.85	-	-	93.63	-
a*	0.44	-	-	-	-	-	0.41	0.38	-	-	0.40	-
b*	9.26	-	-	-	-	-	10.02	9.41	-	-	10.72	-
RVA												
Peak Viscosity, cP	2330	-	-	-	-	-	2049	2189	-	-	2277	-
Minimum viscosity (Through), cP	1807	-	-	-	-	-	1596	1662	-	-	1755	-
Final Viscosity, cP	2559	-	-	-	-	-	2246	2484	-	-	2675	-
Peak Time, min	7.00	-	-	-	-	-	7.00	7.00	-	-	7.00	-
GLUTEN												
Wet gluten (14% mb), %	30.1	-	-	-	-	-	31.1	29.4	-	-	27.7	-
Dry gluten (14% mb), %	10.7	-	-	-	-	-	10.4	9.9	-	-	9.3	-
Gluten Index	94	-	-	-	-	-	85	87	-	-	90	-
FARINOGRAM												
Water absorption (14% mb), %	60.5	-	-	-	-	-	61.2	60.5	-	-	60.2	-
Development time, min	8.8	-	-	-	-	-	5.4	5.3	-	-	7.2	-
Stability, min	14.9	-	-	-	-	-	10.3	8.5	-	-	13.9	-
Mixing tolerance index, BU	18	-	-	-	-	-	20	34	-	-	20	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	132	-	-	-	-	-	105	86	-	-	82	-
Maximum height, BU	453	-	-	-	-	-	380	335	-	-	315	-
Extensibility, mm	217	-	-	-	-	-	201	187	-	-	186	-
ALVEOGRAM												
Strength (S), cm ²	48.2	-	-	-	-	-	43.7	35.2	-	-	39.1	-
Stability (P), mm	85	-	-	-	-	-	86	83	-	-	89	-
Distensibility (L), mm	132	-	-	-	-	-	125	108	-	-	108	-
Configuration ratio (P/L)	0.64	-	-	-	-	-	0.69	0.77	-	-	0.82	-
MIXOGRAM												
Peak time, min	3.2	-	-	-	-	-	2.4	2.9	-	-	2.6	-
100g BAKING TEST												
Loaf volume, cm ³	894	-	-	-	-	-	858	816	-	-	909	-
Evaluation (see page 60)	1	-	-	-	-	-	1	0	-	-	0	-

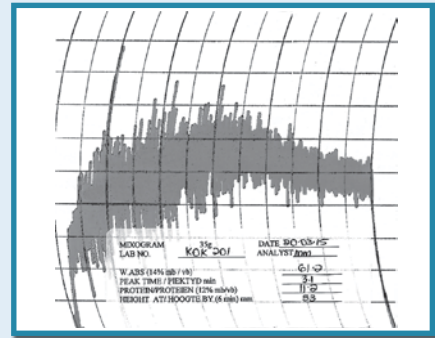
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

27

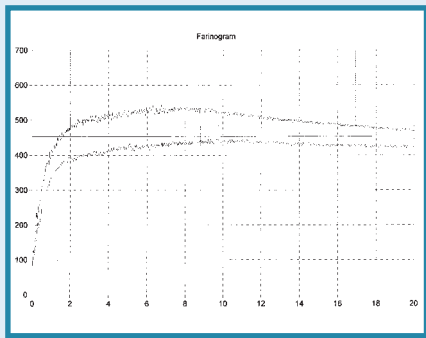


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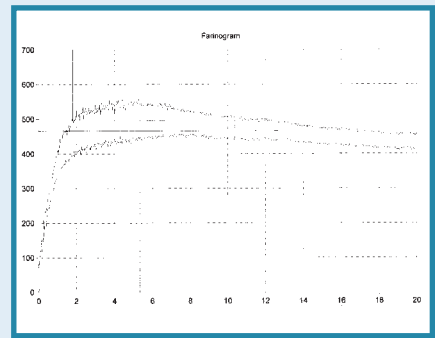


FARINOGRAM

27

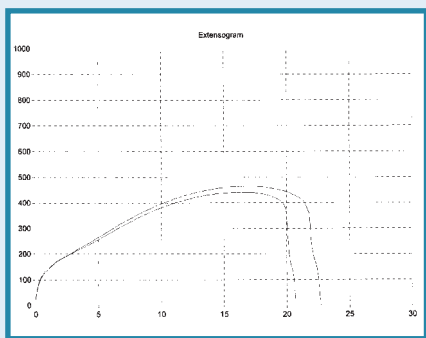


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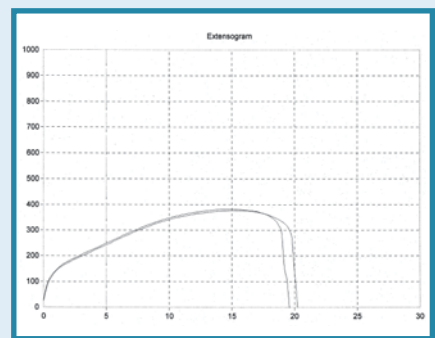


EXTENSOGRAM

27

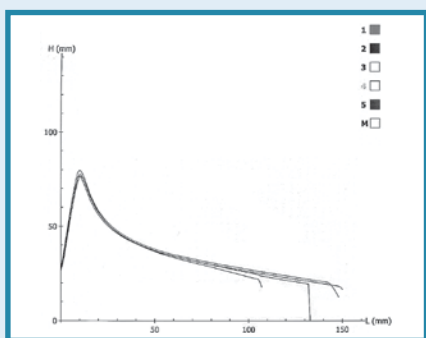


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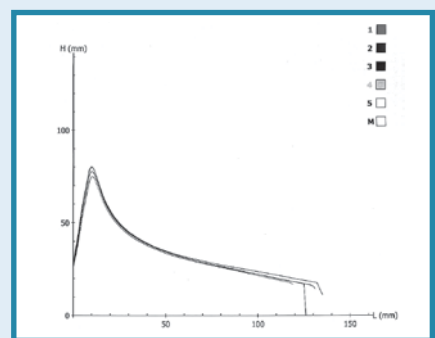


ALVEOGRAM

27



28



South African Quality data per production region

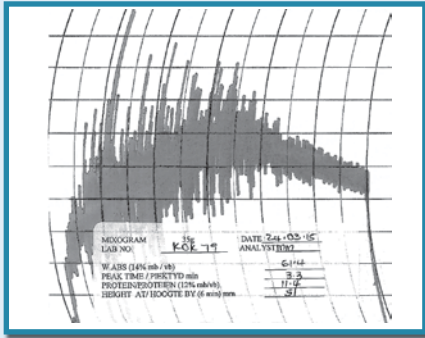
IRRIGATION WHEAT

PRODUCTION REGION	(29) Mpumalanga Southern Region				(32) Mpumalanga Western Region							
WHEAT												
	ave	min	max	stdev	ave	min	max	stdev				
Protein (12% mb), %	12.5	-	-	-	12.7	11.9	13.4	0.61				
Falling number, sec	350	-	-	-	282	174	348	60.49				
1000 Kernel mass (13% mb), g	34.4	-	-	-	39.2	31.2	46.8	5.71				
Hectolitre mass (dirty), kg/hl	81.3	-	-	-	79.7	76.0	82.8	2.28				
Screenings (<1.8mm), %	2.01	-	-	-	1.39	0.20	2.52	1.10				
Total damaged kernels, %	1.06	-	-	-	0.79	0.20	2.16	0.66				
Combined deviations, %	3.43	-	-	-	2.86	0.72	6.42	1.94				
Number of samples	1				7							
CULTIVARS												
		SST 835	65.0		SST 835	41.4						
cultivars		SST 875	27.0		SST 843	33.9						
with highest %		SST 843	8.0		Duzi	7.4						
occurrence					SST 876	6.4						
					SST 884	5.3						
Number of samples	1				7							
MIXOGRAM (Quadromat)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	3.3	-	-	-	3.3	2.3	4.3	0.70				
Tail height (6min), mm	51	-	-	-	53	50	57	2.54				
Number of samples	1				7							
	COMPOSITE SAMPLES											
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
BÜHLER EXTRACTION, %							73.1	74.2	-	-	-	-
FLOUR												
Protein (12% mb), %							11.5	11.1	-	-	-	-
Ash (db), %							0.54	0.61	-	-	-	-
Colour, KJ (wet)							-2.9	-3.0	-	-	-	-
Colour, Minolta CM5 (dry)												
L*							93.34	93.32	-	-	-	-
a*							0.39	0.42	-	-	-	-
b*							9.13	9.15	-	-	-	-
RVA												
Peak Viscosity, cP							1929	1698	-	-	-	-
Minimum viscosity (Through), cP							1683	1440	-	-	-	-
Final Viscosity, cP							2094	1836	-	-	-	-
Peak Time, min							6.73	6.60	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %							31.4	30.5	-	-	-	-
Dry gluten (14% mb), %							10.6	10.0	-	-	-	-
Gluten Index							88	84	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %							60.3	61.1	-	-	-	-
Development time, min							7.5	5.7	-	-	-	-
Stability, min							9.8	5.8	-	-	-	-
Mixing tolerance index, BU							35	57	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²							119	90	-	-	-	-
Maximum height, BU							395	302	-	-	-	-
Extensibility, mm							224	217	-	-	-	-
ALVEOGRAM												
Strength (S), cm ²							44.6	37.3	-	-	-	-
Stability (P), mm							74	70	-	-	-	-
Distensibility (L), mm							151	160	-	-	-	-
Configuration ratio (P/L)							0.49	0.44	-	-	-	-
MIXOGRAM												
Peak time, min							2.8	2.6	-	-	-	-
100g BAKING TEST												
Loaf volume, cm ³							879	849	-	-	-	-
Evaluation (see page 60)							1	1	-	-	-	-

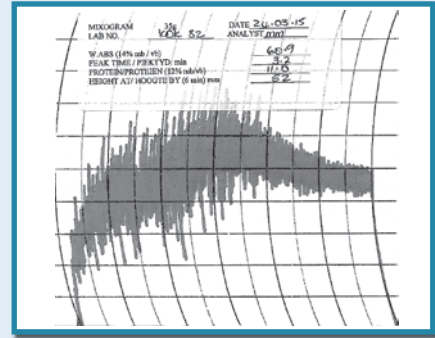
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

29



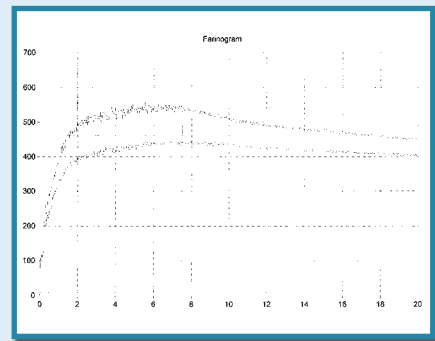
32



FARINOGRAM

29

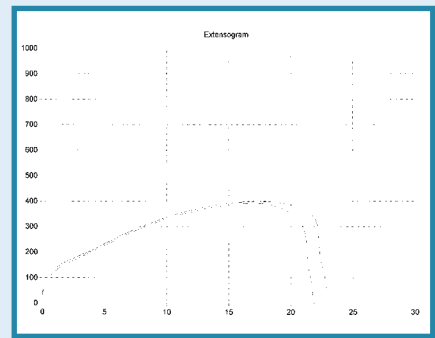
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EXTENSOGRAM

29

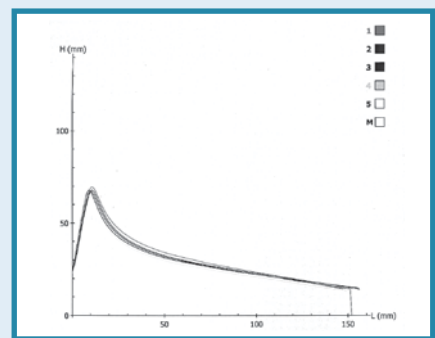
32



ALVEOGRAM

29

32



South African Quality data per production region

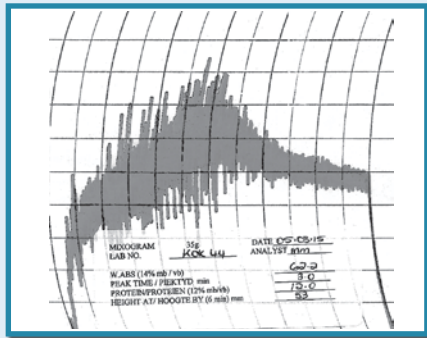
IRRIGATION WHEAT

PRODUCTION REGION	(33) Mpumalanga Northern Region				(34) Gauteng							
WHEAT												
	ave	min	max	stdev	ave	min	max	stdev				
Protein (12% mb), %	11.5	10.0	12.7	0.94	11.8	10.3	12.9	0.87				
Falling number, sec	408	374	442	25.80	338	288	392	34.14				
1000 Kernel mass (13% mb), g	42.6	38.5	46.7	3.40	41.5	37.4	46.6	3.51				
Hectolitre mass (dirty), kg/hl	81.5	80.1	82.6	0.99	81.5	79.8	83.4	1.31				
Screenings (<1.8mm), %	0.60	0.38	1.02	0.23	2.85	0.34	17.12	5.78				
Total damaged kernels, %	2.16	0.40	3.66	1.38	0.40	0.00	1.00	0.37				
Combined deviations, %	2.90	0.88	4.22	1.54	3.66	0.77	17.98	5.81				
Number of samples	6				8							
CULTIVARS												
	SST 843		30.7		SST 875		32.4					
cultivars with highest % occurrence	SST 835		23.7		SST 884		32.1					
	Duzi		17.5		SST 835		18.1					
	Kariega		16.7		SST 843		11.1					
	SST 876		4.3		PAN 3471		6.1					
Number of samples	6				8							
MIXOGRAM (Quadromat)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	3.1	2.3	3.5	0.48	3.6	2.5	4.8	0.92				
Tail height (6 min), mm	50	46	56	3.85	49	45	57	4.03				
Number of samples	6				8							
COMPOSITE SAMPLES												
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
BÜHLER EXTRACTION, %	74.0	-	74.2	-	-	-	74.8	72.6	73.9	-	-	-
FLOUR												
Protein (12% mb), %	11.2	-	8.9	-	-	-	11.6	9.9	9.7	-	-	-
Ash (db), %	0.58	-	0.60	-	-	-	0.63	0.62	0.56	-	-	-
Colour, KJ (wet)	-3.5	-	-3.9	-	-	-	-3.1	-2.5	-3.0	-	-	-
Colour, Minolta CM5 (dry)												
L*	93.76	-	93.98	-	-	-	93.28	93.11	93.45	-	-	-
a*	0.48	-	0.41	-	-	-	0.51	0.52	0.50	-	-	-
b*	9.21	-	8.92	-	-	-	9.88	10.27	9.82	-	-	-
RVA												
Peak Viscosity, cP	2331	-	2385	-	-	-	2118	1953	1847	-	-	-
Minimum viscosity (Through), cP	1788	-	1783	-	-	-	1737	1674	1575	-	-	-
Final Viscosity, cP	2546	-	2768	-	-	-	2304	2206	2027	-	-	-
Peak Time, min	7.00	-	7.00	-	-	-	6.87	6.73	6.60	-	-	-
GLUTEN												
Wet gluten (14% mb), %	29.1	-	23.4	-	-	-	31.5	27.8	25.6	-	-	-
Dry gluten (14% mb), %	9.9	-	7.7	-	-	-	10.4	9.7	8.3	-	-	-
Gluten Index	94	-	91	-	-	-	79	86	89	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	60.4	-	59.4	-	-	-	61.1	57.8	59.0	-	-	-
Development time, min	5.9	-	2.0	-	-	-	6.0	4.3	2.2	-	-	-
Stability, min	10.5	-	7.0	-	-	-	7.4	9.5	7.0	-	-	-
Mixing tolerance index, BU	20	-	29	-	-	-	44	23	34	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm ²	131	-	78	-	-	-	90	92	84	-	-	-
Maximum height, BU	437	-	328	-	-	-	332	364	388	-	-	-
Extensibility, mm	220	-	174	-	-	-	197	182	155	-	-	-
ALVEOGRAM												
Strength (S), cm ²	52.2	-	33.2	-	-	-	38.8	36.7	35.9	-	-	-
Stability (P), mm	87	-	80	-	-	-	80	69	100	-	-	-
Distensibility (L), mm	142	-	101	-	-	-	121	139	74	-	-	-
Configuration ratio (P/L)	0.61	-	0.79	-	-	-	0.66	0.50	1.35	-	-	-
MIXOGRAM												
Peak time, min	3.0	-	3.1	-	-	-	2.5	3.0	3.7	-	-	-
100g BAKING TEST												
Loaf volume, cm ³	873	-	761	-	-	-	974	905	787	-	-	-
Evaluation (see page 60)	0	-	0	-	-	-	0	0	0	-	-	-

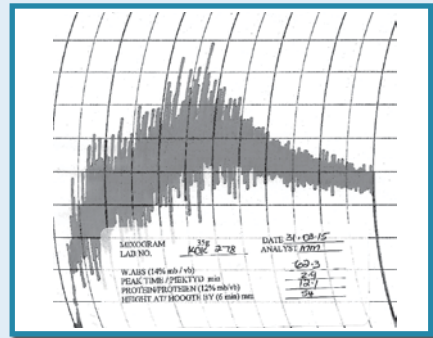
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

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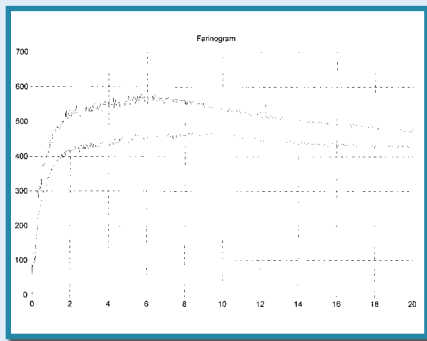


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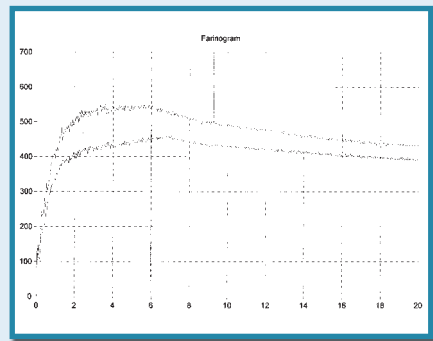


FARINOGRAM

33

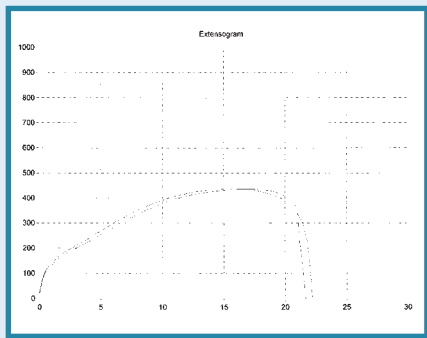


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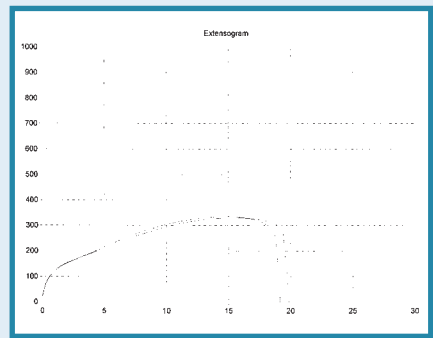


EXTENSOGRAM

33

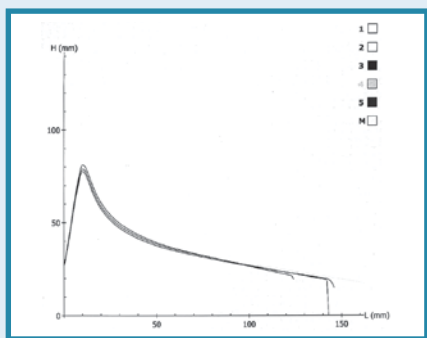


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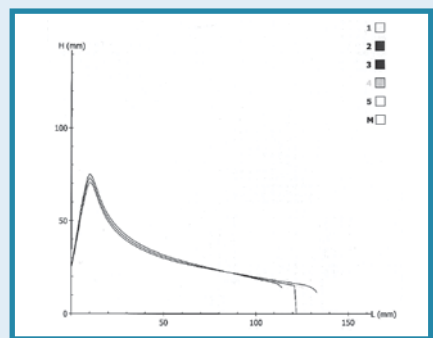


ALVEOGRAM

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South African Quality data per production region

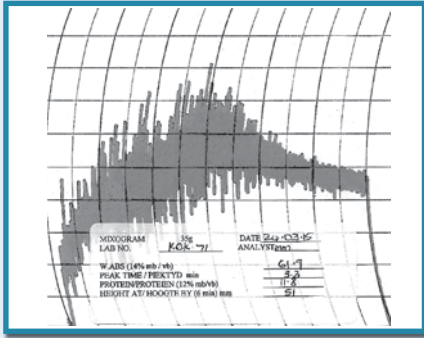
IRRIGATION WHEAT

PRODUCTION REGION	(35) Limpopo Region				(36) Kwazulu-Natal							
WHEAT												
	ave	min	max	stdev	ave	min	max	stdev				
Protein (12% mb), %	11.6	9.2	13.8	1.23	12.3	11.0	13.2	0.94				
Falling number, sec	374	231	487	54.60	354	251	416	75.44				
1000 Kernel mass (13% mb), g	40.8	35.4	46.2	3.06	40.2	38.1	43.9	2.62				
Hectolitre mass (dirty), kg/hl	81.4	78.9	84.8	1.33	82.2	81.8	82.4	0.28				
Screenings (<1.8mm), %	0.80	0.15	2.63	0.60	1.21	0.41	2.09	0.75				
Total damaged kernels, %	0.93	0.06	2.90	0.78	1.17	0.54	2.46	0.89				
Combined deviations, %	1.97	0.45	5.36	1.30	2.73	1.21	4.34	1.53				
Number of samples	28				4							
CULTIVARS												
	SST 843		36.6		SST 835		41.0					
cultivars	SST 835		23.0		SST 875		20.8					
with highest %	SST 884		18.7		PAN 3400		14.0					
occurrence	Duzi		10.1		SST 843		10.0					
	SST 875		4.7		SST 884		9.0					
Number of samples	28				4							
MIXOGRAM (Quadromat)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	3.5	2.4	5.3	0.72	2.8	2.5	3.3	0.39				
Tail height (6 min), mm	53	43	70	6.01	52	46	56	4.50				
Number of samples	28				4							
COMPOSITE SAMPLES												
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
BÜHLER EXTRACTION, %	74.6	74.9	73.8	73.5	73.3	-	74.3	75.5	-	-	-	-
FLOUR												
Protein (12% mb), %	12.1	10.7	9.4	9.1	11.3	-	11.5	10.0	-	-	-	-
Ash (db), %	0.62	0.63	0.59	0.56	0.62	-	0.58	0.62	-	-	-	-
Colour, KJ (wet)	-3.5	-3.4	-3.5	-3.6	-3.0	-	-3.2	-3.5	-	-	-	-
Colour, Minolta CM5 (dry)												
L*	93.60	93.57	93.69	93.86	93.62	-	93.81	93.93	-	-	-	-
a*	0.49	0.45	0.39	0.41	0.36	-	0.38	0.38	-	-	-	-
b*	9.31	9.67	9.65	9.69	8.79	-	8.71	8.62	-	-	-	-
RVA												
Peak Viscosity, cP	2503	2453	2337	2410	1499	-	2391	2218	-	-	-	-
Minimum viscosity (Through), cP	1905	1884	1853	1838	1232	-	1881	1614	-	-	-	-
Final Viscosity, cP	2811	2752	2635	2762	1652	-	2539	2486	-	-	-	-
Peak Time, min	7.00	7.00	7.00	7.00	6.40	-	7.00	7.00	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	31.0	28.2	23.8	23.3	29.2	-	30.6	27.1	-	-	-	-
Dry gluten (14% mb), %	10.7	9.5	7.9	7.8	10.3	-	10.4	9.3	-	-	-	-
Gluten Index	93	85	94	97	92	-	92	79	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	59.9	59.0	57.1	58.3	59.4	-	61.4	58.7	-	-	-	-
Development time, min	7.0	6.0	6.2	6.0	4.8	-	6.6	4.3	-	-	-	-
Stability, min	10.1	8.0	9.5	10.7	9.6	-	9.4	4.7	-	-	-	-
Mixing tolerance index, BU	33	41	35	23	25	-	32	63	-	-	-	-
EXTENSOGAM (45 min pull)												
Area, cm ²	135	96	96	101	121	-	116	71	-	-	-	-
Maximum height, BU	459	385	405	440	427	-	418	275	-	-	-	-
Extensibility, mm	220	188	177	172	217	-	204	182	-	-	-	-
ALVEOGRAM												
Strength (S), cm ²	50.6	32.4	34.6	34.3	44.8	-	44.2	28.1	-	-	-	-
Stability (P), mm	75	80	71	82	72	-	88	66	-	-	-	-
Distensibility (L), mm	157	89	121	95	139	-	131	127	-	-	-	-
Configuration ratio (P/L)	0.48	0.90	0.59	0.86	0.52	-	0.67	0.52	-	-	-	-
MIXOGRAM												
Peak time, min	3.0	2.8	3.0	3.3	3.0	-	2.9	2.2	-	-	-	-
100g BAKING TEST												
Loaf volume, cm ³	947	878	883	830	993	-	940	823	-	-	-	-
Evaluation (see page 60)	0	0	0	0	0	-	0	0	-	-	-	-

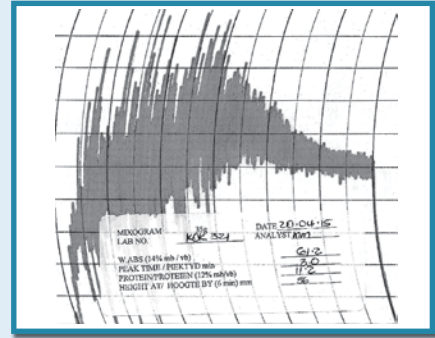
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

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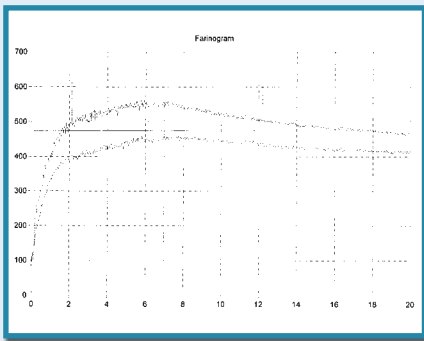


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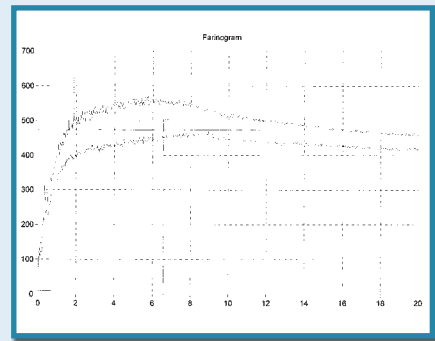


FARINOGRAM

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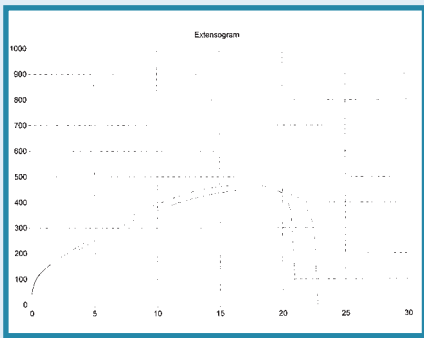


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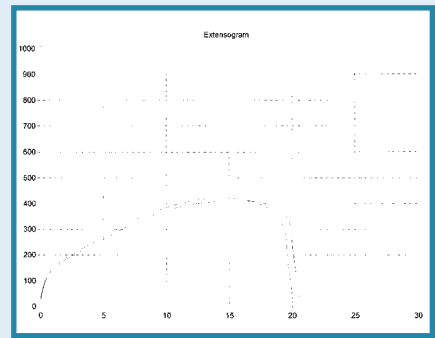


EXTENSOGRAM

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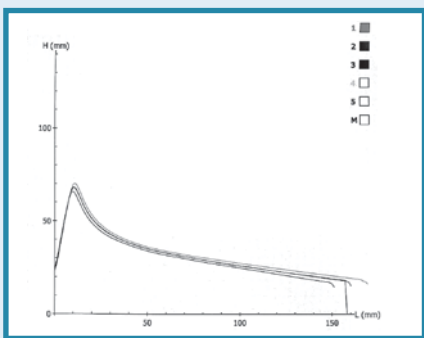


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ALVEOGRAM

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