

South African Quality data per production region

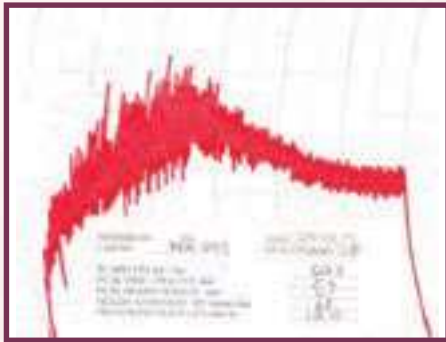
WINTER RAINFALL WHEAT

PRODUCTION REGION	(1) Namakwaland Region						(2) Swartland Western Region					
WHEAT												
	ave	min	max	stdev								
Protein (12% mb), %	11.9	10.8	13.3	1.27								
Falling number, sec	444	437	447	5.77								
1000 Kernel mass (13% mb), g	37.5	37.1	37.8	0.36								
Hectolitre mass (dirty), kg/hl	79.2	77.8	80.0	1.22								
Screenings (<1.8 mm sieve), %	3.17	2.56	3.55	0.53								
Total damaged kernels, %	1.25	1.10	1.40	0.15								
Combined deviations, %	5.22	4.16	6.01	0.95								
Number of samples	3				10							
CULTIVARS												
	SST 0117 30.3						SST 0117 27.2					
	SST 0127 23.3						SST 0127 22.4					
	SST 056 23.3						SST 056 18.5					
	SST 087 15.3						SST 087 13.8					
	SST 015 7.7						SST 88 13.7					
Number of samples	3				10							
MIXOGRAM (Quadromat Junior)												
	ave	min	max	stdev								
Peak time, min	2.8	2.6	2.9	0.15								
Tail height (6 min), mm	46	44	48	2.00								
Number of samples	3				10							
CLASS AND GRADE	COMPOSITE SAMPLES											
	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	72.8	-	-	-	-	-	69.6	69.9	-	-	-	-
	11.3	-	-	-	-	-	11.3	10.4	-	-	-	-
	0.61	-	-	-	-	-	0.59	0.62	-	-	-	-
	-4.5	-	-	-	-	-	-4.5	-4.6	-	-	-	-
	93.72	-	-	-	-	-	93.74	94.14	-	-	-	-
	0.40	-	-	-	-	-	0.36	0.40	-	-	-	-
	9.84	-	-	-	-	-	9.79	10.33	-	-	-	-
	RVA											
Peak Viscosity, cP	2390	-	-	-	-	-	1956	2051	-	-	-	-
Minimum viscosity (Trough), cP	1807	-	-	-	-	-	1377	1465	-	-	-	-
Final Viscosity, cP	2534	-	-	-	-	-	2248	2361	-	-	-	-
Peak Time, min	7.00	-	-	-	-	-	7.00	7.00	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	31.8	-	-	-	-	-	30.3	25.7	-	-	-	-
Dry gluten (14% mb), %	10.4	-	-	-	-	-	10.4	8.6	-	-	-	-
Gluten Index	89	-	-	-	-	-	93	96	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	61.1	-	-	-	-	-	60.3	59.7	-	-	-	-
Development time, min	6.0	-	-	-	-	-	4.8	4.7	-	-	-	-
Stability, min	6.9	-	-	-	-	-	8.4	8.9	-	-	-	-
Mixing tolerance index, BU	41	-	-	-	-	-	28	23	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm²	105	-	-	-	-	-	99	79	-	-	-	-
Maximum height, BU	395	-	-	-	-	-	402	355	-	-	-	-
Extensibility, mm	191	-	-	-	-	-	177	165	-	-	-	-
ALVEOGRAM												
Strength (S), cm²	37.5	-	-	-	-	-	37.2	33.8	-	-	-	-
Stability (P), mm	87	-	-	-	-	-	93	95	-	-	-	-
Distensibility (L), mm	102	-	-	-	-	-	97	78	-	-	-	-
Configuration ratio (P/L)	0.85	-	-	-	-	-	0.96	1.22	-	-	-	-
MIXOGRAM												
Peak time, min	2.6	-	-	-	-	-	2.8	3.0	-	-	-	-
100g BAKING TEST												
Loaf volume, cm³	1054	-	-	-	-	-	1021	908	-	-	-	-
Evaluation (see page 79)	0	-	-	-	-	-	0	0	-	-	-	-

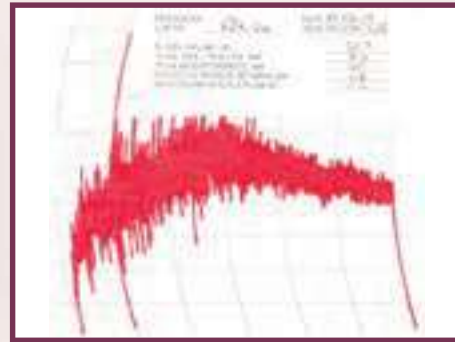
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

1



2

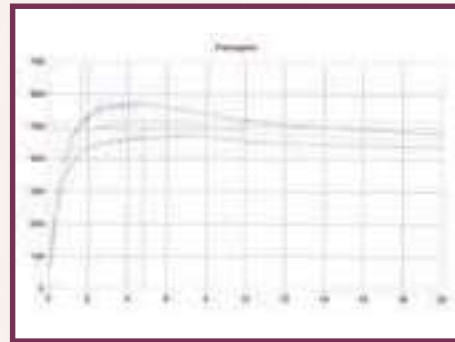


FARINOGRAM

1

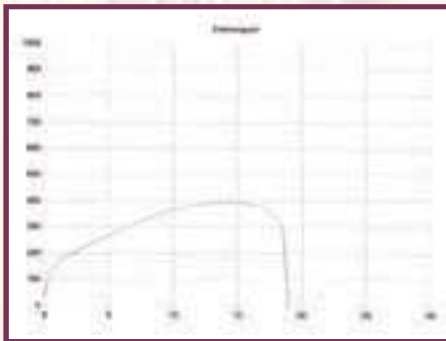


2

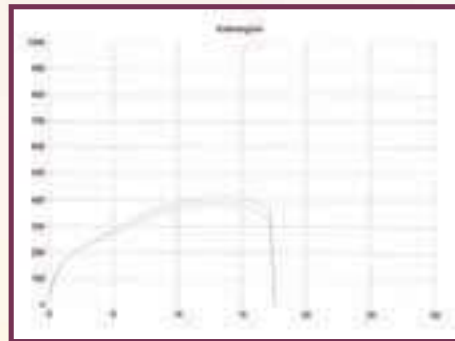


EXTENSOGRAM

1

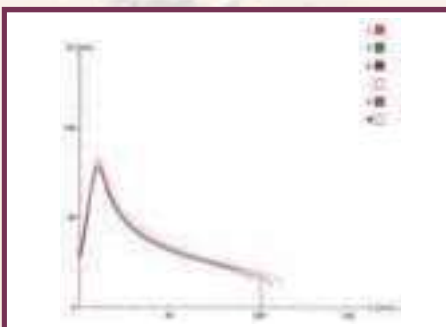


2

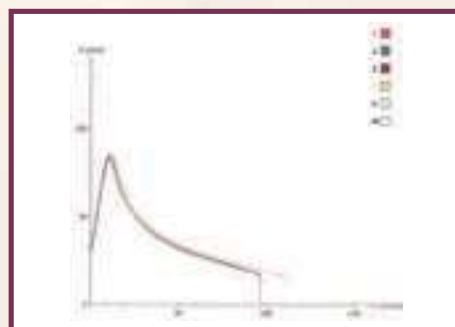


ALVEOGRAM

1



2



South African Quality data per production region

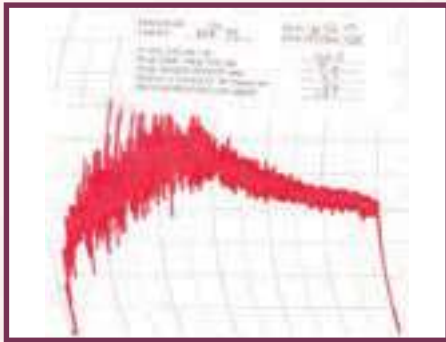
WINTER RAINFALL WHEAT

PRODUCTION REGION	(3) Swartland Central Region						(4) Swartland Eastern Region					
WHEAT												
	ave	min	max	stdev			ave	min	max	stdev		
Protein (12% mb), %	12.1	10.2	15.4	1.00			11.1	9.4	12.9	0.91		
Falling number, sec	411	295	618	42.66			378	333	432	28.23		
1000 Kernel mass (13% mb), g	39.1	28.3	46.5	3.24			40.5	32.2	45.7	2.96		
Hectolitre mass (dirty), kg/hl	79.8	76.0	83.5	1.42			80.9	78.2	82.3	1.14		
Screenings (<1.8 mm sieve), %	1.66	0.18	5.05	0.85			1.76	0.17	4.10	1.17		
Total damaged kernels, %	0.80	0.12	3.60	0.57			0.91	0.56	1.46	0.24		
Combined deviations, %	3.31	0.88	7.32	1.31			3.40	1.61	7.18	1.40		
Number of samples	78						22					
CULTIVARS												
	SST 0117 26.8						SST 0127 24.4					
cultivars	SST 0127 23.0						SST 0117 24.2					
with highest %	SST 087 18.6						SST 087 16.9					
occurrence	SST 056 14.7						SST 056 14.6					
	SST 88 8.2						SST 88 8.3					
Number of samples	78						22					
MIXOGRAM (Quadromat Junior)												
	ave	min	max	stdev			ave	min	max	stdev		
Peak time, min	2.7	2.1	3.3	0.23			2.8	2.3	3.8	0.35		
Tail height (6 min), mm	46	40	52	2.45			45	41	49	2.61		
Number of samples	78						22					
	COMPOSITE SAMPLES											
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
Bühler Extraction, %	68.9	69.9	70.4	-	70.1	-	69.7	70.4	70.9	70.3	-	-
FLOUR												
Protein (12% mb), %	11.9	10.7	9.6	-	11.0	-	11.5	10.6	9.5	8.7	-	-
Ash (db), %	0.56	0.55	0.55	-	0.54	-	0.56	0.59	0.55	0.56	-	-
Colour, KJ (wet)	-4.4	-4.5	-4.8	-	-4.7	-	-4.6	-4.5	-4.7	-4.9	-	-
Colour, Konica Minolta CM5 (dry)												
L*	94.02	94.27	94.24	-	94.43	-	94.31	94.05	94.27	94.15	-	-
a*	0.43	0.42	0.35	-	0.34	-	0.39	0.42	0.37	0.39	-	-
b*	10.23	10.37	10.68	-	9.39	-	9.52	9.79	9.69	10.57	-	-
RVA												
Peak Viscosity, cP	2075	2094	1991	-	2088	-	1987	2145	2319	2381	-	-
Minimum viscosity (Trough), cP	1463	1508	1358	-	1481	-	1426	1559	1765	1809	-	-
Final Viscosity, cP	2387	2444	2313	-	2431	-	2331	2540	2760	2838	-	-
Peak Time, min	7.00	7.00	7.00	-	7.00	-	7.00	7.00	7.00	7.00	-	-
GLUTEN												
Wet gluten (14% mb), %	32.0	28.6	24.8	-	30.7	-	32.0	28.9	25.8	-	-	-
Dry gluten (14% mb), %	11.0	9.6	8.1	-	10.7	-	10.6	10.2	8.8	-	-	-
Gluten Index	94	94	97	-	93	-	93	96	95	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	62.0	59.7	58.3	-	60.2	-	61.0	60.0	58.2	56.1	-	-
Development time, min	4.7	5.3	4.2	-	4.3	-	5.1	4.3	4.4	2.8	-	-
Stability, min	8.0	7.2	6.7	-	7.8	-	7.5	6.5	6.5	7.3	-	-
Mixing tolerance index, BU	29	40	37	-	27	-	36	35	43	25	-	-
EXTENSOGRAM (45 min pull)												
Area, cm²	105	93	87	-	94	-	99	81	70	73	-	-
Maximum height, BU	395	380	373	-	365	-	360	329	310	348	-	-
Extensibility, mm	192	182	167	-	190	-	199	181	160	153	-	-
ALVEOGRAM												
Strength (S), cm²	43.1	36.9	30.7	-	36.1	-	36.7	30.9	26.6	24.2	-	-
Stability (P), mm	92	81	77	-	80	-	80	77	70	70	-	-
Distensibility (L), mm	122	120	102	-	119	-	118	101	98	79	-	-
Configuration ratio (P/L)	0.75	0.68	0.75	-	0.67	-	0.68	0.76	0.71	0.89	-	-
MIXOGRAM												
Peak time, min	2.3	2.3	2.3	-	2.4	-	2.4	2.3	2.9	2.9	-	-
100g BAKING TEST												
Loaf volume, cm³	991	976	889	-	979	-	1014	1000	869	857	-	-
Evaluation (see page 79)	0	0	0	-	0	-	0	0	0	0	-	-

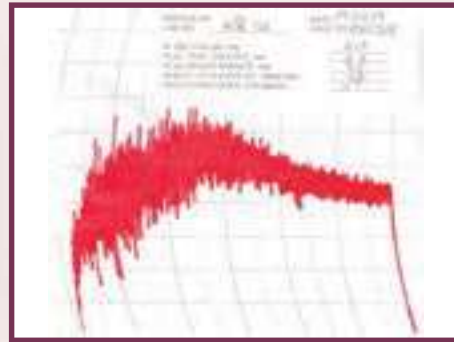
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

3

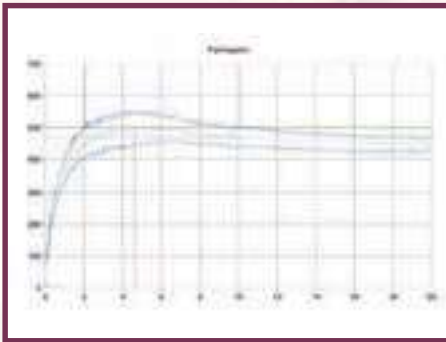


4

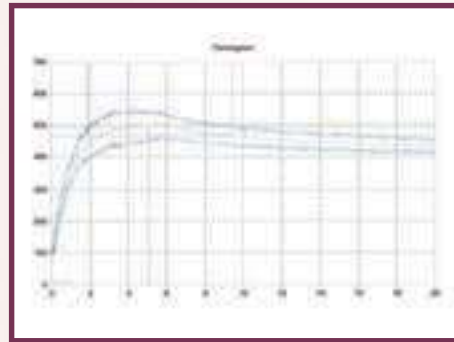


FARINOGRAM

3

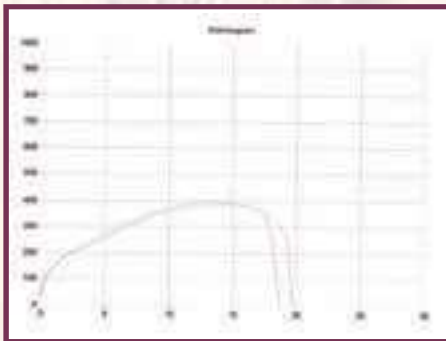


4

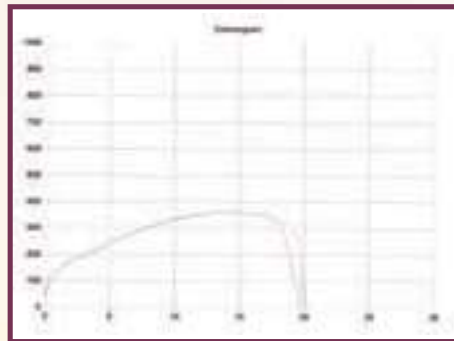


EXTENSOGRAM

3

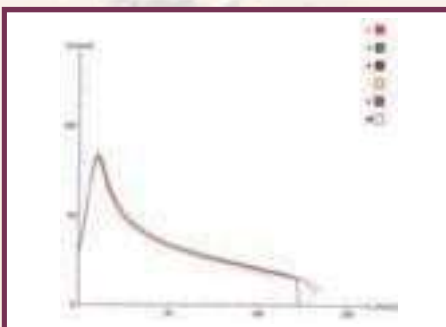


4

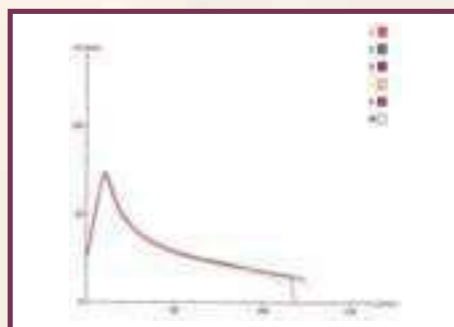


ALVEOGRAM

3



4



South African Quality data per production region

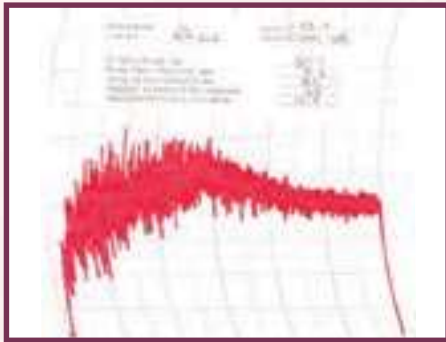
WINTER RAINFALL WHEAT

PRODUCTION REGION	(5) Rûens Western Region						(6) Rûens Eastern Region					
WHEAT												
	ave	min	max	stdev			ave	min	max	stdev		
Protein (12% mb), %	11.1	9.0	12.7	1.15			12.0	9.5	13.9	1.03		
Falling number, sec	386	340	437	26.41			341	284	410	25.45		
1000 Kernel mass (13% mb), g	38.7	32.6	44.1	3.08			38.5	33.4	43.2	2.41		
Hectolitre mass (dirty), kg/hl	80.3	77.5	82.2	1.51			79.3	76.6	81.8	1.31		
Screenings (<1.8 mm sieve), %	1.12	0.28	3.96	1.11			2.13	1.03	3.65	0.68		
Total damaged kernels, %	0.62	0.16	1.76	0.48			0.57	0.18	1.70	0.31		
Combined deviations, %	2.28	0.83	5.28	1.24			3.59	1.99	7.29	1.11		
Number of samples	21						27					
CULTIVARS												
	SST 0117 28.9						SST 087 25.6					
cultivars	SST 0127 25.8						SST 0117 22.3					
with highest %	SST 087 17.3						SST 0127 18.2					
occurrence	SST 056 11.2						SST 056 17.0					
	SST 88 10.4						SST 88 8.5					
Number of samples	21						27					
MIXOGRAM (Quadromat Junior)												
	ave	min	max	stdev			ave	min	max	stdev		
Peak time, min	2.9	2.3	3.8	0.35			2.8	2.3	3.3	0.25		
Tail height (6 min), mm	46	39	52	3.43			48	38	56	4.04		
Number of samples	21						27					
	COMPOSITE SAMPLES											
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
Bühler Extraction, %	69.8	70.6	69.1	70.5	-	-	70.4	70.6	70.4	70.0	69.9	-
FLOUR												
Protein (12% mb), %	11.9	10.9	9.4	8.9	-	-	11.7	10.7	9.9	9.8	11.8	-
Ash (db), %	0.60	0.62	0.64	0.63	-	-	0.63	0.60	0.66	0.65	0.62	-
Colour, KJ (wet)	-4.2	-4.2	-4.4	-4.1	-	-	-4.3	-4.2	-4.3	-4.2	-4.4	-
Colour, Konica Minolta CM5 (dry)												
L*	93.65	93.65	93.97	93.46	-	-	93.87	93.56	93.65	93.62	93.85	-
a*	0.52	0.48	0.40	0.64	-	-	0.48	0.55	0.49	0.51	0.48	-
b*	11.06	10.60	10.17	10.82	-	-	9.98	10.54	10.74	10.82	10.25	-
RVA												
Peak Viscosity, cP	2468	2420	2225	2433	-	-	2297	2378	2265	2312	2418	-
Minimum viscosity (Trough), cP	1813	1803	1703	1907	-	-	1735	1841	1927	1837	1857	-
Final Viscosity, cP	2883	2840	2561	2863	-	-	2656	2745	2580	2611	2743	-
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), %	33.3	30.1	24.9	23.1	-	-	31.8	28.2	24.6	26.6	32.5	-
Dry gluten (14% mb), %	12.4	10.9	8.6	8.1	-	-	11.3	9.6	8.4	9.0	10.7	-
Gluten Index	95	96	97	99	-	-	96	96	98	97	91	-
FARINOGRAM												
Water absorption (14% mb), %	60.9	60.0	58.9	57.2	-	-	61.0	59.3	57.7	57.8	60.9	-
Development time, min	4.3	3.9	3.3	4.3	-	-	5.2	4.1	4.2	3.8	4.8	-
Stability, min	6.9	5.5	6.0	5.5	-	-	7.6	6.2	5.7	5.0	6.4	-
Mixing tolerance index, BU	39	44	38	50	-	-	39	40	47	52	50	-
EXTENSOGRAM (45 min pull)												
Area, cm²	83	78	60	58	-	-	97	82	77	67	102	-
Maximum height, BU	309	309	256	252	-	-	346	291	301	251	342	-
Extensibility, mm	191	183	167	160	-	-	200	201	186	186	212	-
ALVEOGRAM												
Strength (S), cm²	38.5	33.2	27.1	21.9	-	-	36.2	30.9	27.5	29.8	37.0	-
Stability (P), mm	86	81	81	74	-	-	86	74	73	81	77	-
Distensibility (L), mm	113	103	81	69	-	-	105	110	97	101	129	-
Configuration ratio (P/L)	0.76	0.79	1.00	1.07	-	-	0.82	0.67	0.75	0.80	0.60	-
MIXOGRAM												
Peak time, min	2.5	2.7	2.7	2.7	-	-	2.6	2.4	2.8	2.3	2.2	-
100g BAKING TEST												
Loaf volume, cm³	1032	1031	861	841	-	-	1066	982	929	989	1128	-
Evaluation (see page 79)	0	0	0	0	-	-	0	0	0	0	0	-

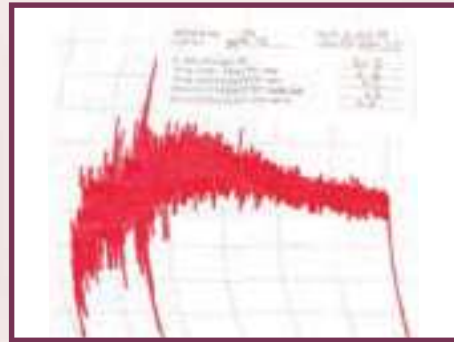
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

5

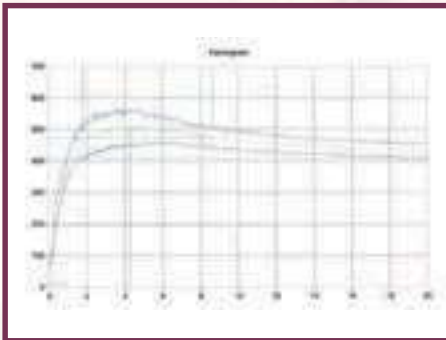


6

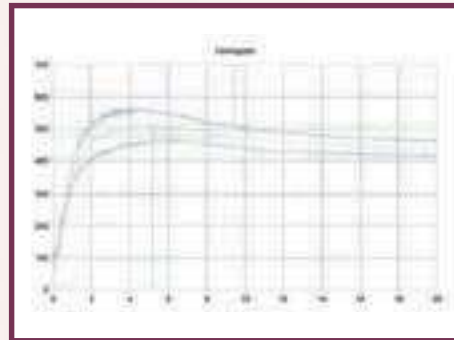


FARINOGRAM

5

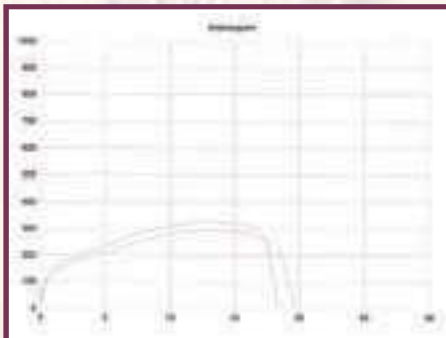


6

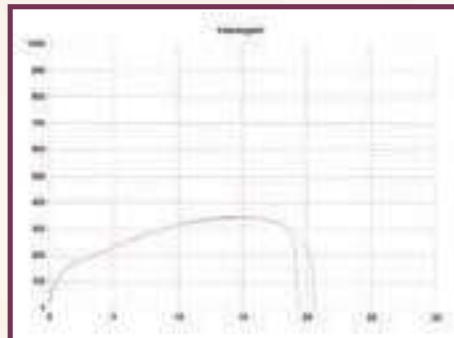


EXTENSOGRAM

5

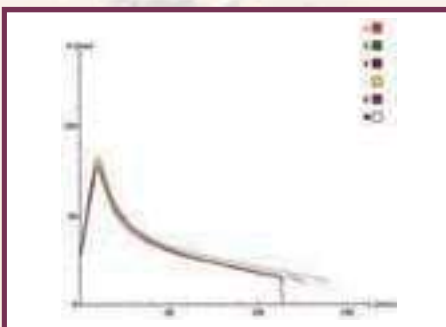


6

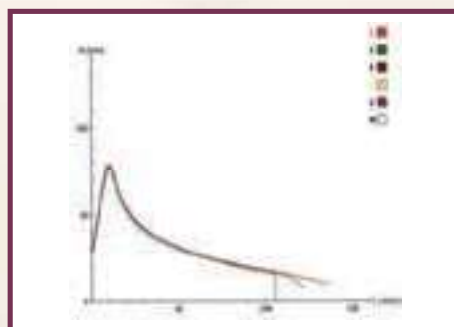


ALVEOGRAM

5



6



South African Quality data per production region

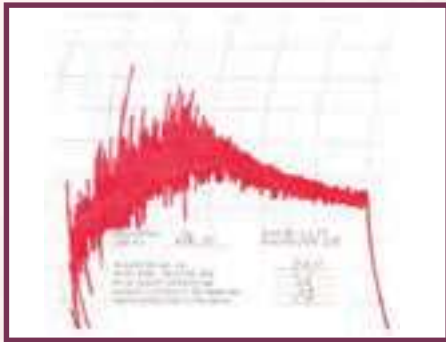
IRRIGATION WHEAT

PRODUCTION REGION	(10) Griqualand West Region						(11) Vaalharts Region					
WHEAT												
Protein (12% mb), %	12.1	10.2	13.6	0.76			12.0	10.7	13.0	0.75		
Falling number, sec	377	279	528	51.07			446	366	639	99.03		
1000 Kernel mass (13% mb), g	39.8	33.4	44.7	2.30			40.0	34.1	46.0	3.63		
Hectolitre mass (dirty), kg/hl	84.5	79.4	86.5	1.92			83.5	80.8	86.0	1.88		
Screenings (<1.8 mm sieve), %	0.93	0.25	3.36	0.87			1.59	0.21	4.76	1.34		
Total damaged kernels, %	0.41	0.16	1.06	0.22			0.57	0.00	1.56	0.42		
Combined deviations, %	1.65	0.65	4.98	1.15			2.87	0.52	5.94	1.79		
Number of samples	30						14					
CULTIVARS												
	SST 884 19.2						PAN 3471 20.4					
cultivars	PAN 3471 15.0						SST 884 13.1					
with highest %	SST 895 11.1						SST 8135 13.0					
occurrence	SST 8154 10.8						SST 8154 10.1					
	SST 8135 10.5						PAN 3400 9.3					
Number of samples	30						14					
MIXOGRAM (Quadromat Junior)												
	ave	min	max	stdev			ave	min	max	stdev		
Peak time, min	2.7	2.4	3.2	0.23			2.8	2.4	3.6	0.30		
Tail height (6 min), mm	47	41	53	3.13			46	40	53	3.41		
Number of samples	30						14					
	COMPOSITE SAMPLES											
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
Bühler Extraction, %	72.7	73.6	73.5	69.0	-	-	73.1	73.4	73.6	70.6	-	-
FLOUR												
Protein (12% mb), %	11.4	10.7	10.0	12.2	-	-	11.7	10.4	9.7	11.2	-	-
Ash (db), %	0.60	0.61	0.64	0.71	-	-	0.60	0.62	0.63	0.62	-	-
Colour, KJ (wet)	-4.8	-5.0	-5.0	-4.3	-	-	-4.6	-4.6	-4.8	-4.5	-	-
Colour, Konica Minolta CM5 (dry)												
L*	93.74	93.89	93.96	93.63	-	-	93.83	93.60	93.75	93.37	-	-
a*	0.55	0.53	0.49	0.52	-	-	0.43	0.51	0.52	0.49	-	-
b*	10.63	10.53	9.97	9.95	-	-	9.47	10.32	10.27	10.78	-	-
RVA												
Peak Viscosity, cP	2159	2152	2170	2240	-	-	2313	2234	2255	2221	-	-
Minimum viscosity (Trough), cP	1622	1632	1579	1648	-	-	1741	1730	1756	1712	-	-
Final Viscosity, cP	2413	2402	2491	2461	-	-	2483	2557	2565	2551	-	-
Peak Time, min	7.00	7.00	7.00	7.00	-	-	7.00	7.00	7.00	7.00	-	-
GLUTEN												
Wet gluten (14% mb), %	32.6	30.1	27.7	34.0	-	-	33.5	29.8	27.3	29.8	-	-
Dry gluten (14% mb), %	11.0	9.7	9.1	11.0	-	-	11.1	9.4	9.1	9.9	-	-
Gluten Index	95	97	96	91	-	-	93	89	91	97	-	-
FARINOGRAM												
Water absorption (14% mb), %	62.4	61.7	61.0	60.8	-	-	61.9	60.4	59.2	61.2	-	-
Development time, min	6.3	6.3	4.8	6.4	-	-	4.5	4.0	4.0	6.0	-	-
Stability, min	8.1	7.7	5.8	10.3	-	-	5.7	4.6	5.5	7.8	-	-
Mixing tolerance index, BU	37	42	48	24	-	-	50	54	50	39	-	-
EXTENSOGRAM (45 min pull)												
Area, cm²	104	111	82	132	-	-	107	80	72	101	-	-
Maximum height, BU	390	383	320	491	-	-	373	287	294	347	-	-
Extensibility, mm	197	211	187	202	-	-	205	198	177	209	-	-
ALVEOGRAM												
Strength (S), cm²	40.2	37.3	33.5	43.7	-	-	38.1	27.2	28.4	33.9	-	-
Stability (P), mm	88	87	85	92	-	-	80	72	70	83	-	-
Distensibility (L), mm	107	98	102	102	-	-	117	95	107	97	-	-
Configuration ratio (P/L)	0.82	0.89	0.83	0.90	-	-	0.68	0.76	0.65	0.86	-	-
MIXOGRAM												
Peak time, min	2.5	2.6	2.3	2.8	-	-	2.3	2.4	2.6	2.7	-	-
100g BAKING TEST												
Loaf volume, cm³	1099	1014	1001	1083	-	-	1127	1072	993	1139	-	-
Evaluation (see page 79)	0	0	0	0	-	-	0	0	0	0	-	-

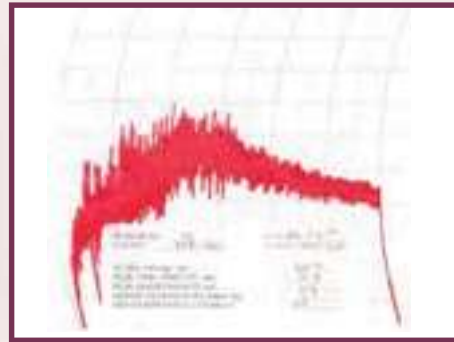
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

10

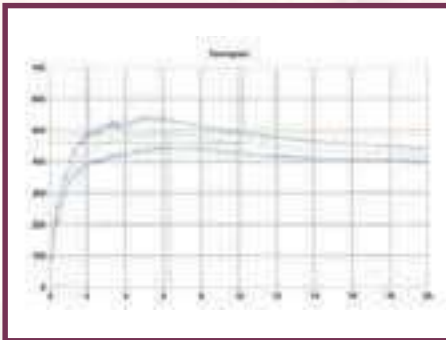


11

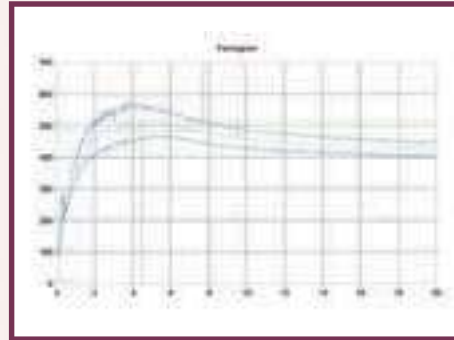


FARINOGRAM

10

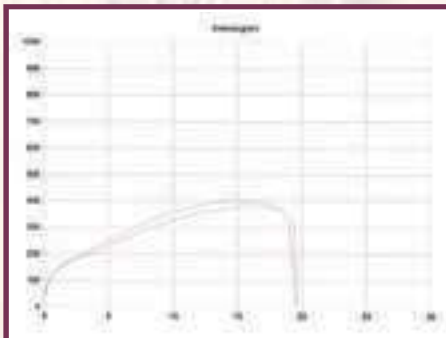


11

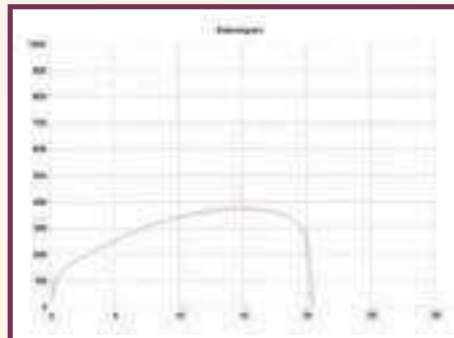


EXTENSOGRAM

10

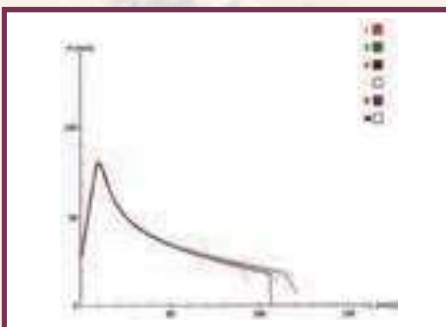


11

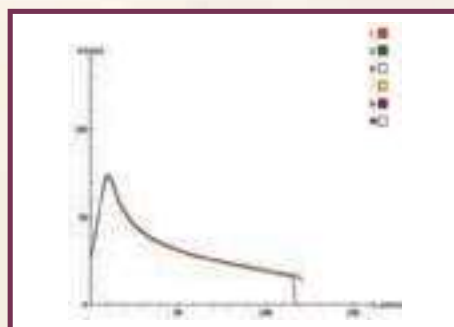


ALVEOGRAM

10



11



South African Quality data per production region

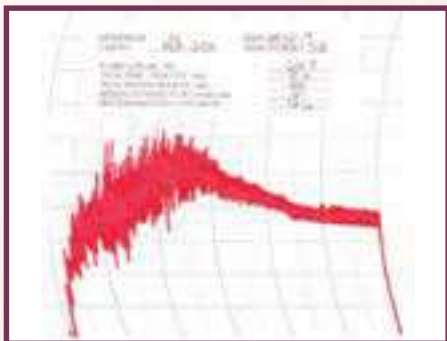
IRRIGATION WHEAT

PRODUCTION REGION	(12) North West Western Region						(14) North West Southern Region					
WHEAT												
	ave	min	max	stdev			ave	min	max	stdev		
Protein (12% mb), %	12.7	11.2	14.2	1.50			13.5	13.1	13.7	0.32		
Falling number, sec	439	397	461	36.12			440	424	449	13.65		
1000 Kernel mass (13% mb), g	42.9	41.1	44.8	1.85			32.8	30.9	35.6	2.48		
Hectolitre mass (dirty), kg/hl	84.3	84.1	84.4	0.15			80.2	78.0	84.2	3.47		
Screenings (<1.8 mm sieve), %	0.23	0.18	0.27	0.05			0.60	0.36	1.00	0.35		
Total damaged kernels, %	0.87	0.64	1.10	0.23			0.60	0.40	0.80	0.20		
Combined deviations, %	1.21	0.94	1.43	0.25			1.63	1.31	2.08	0.40		
Number of samples	3						3					
CULTIVARS												
	SST 8135 19.7						SST 8135 63.7					
cultivars	SST 806 16.0						SST 843 14.0					
with highest %	SST 843 15.7						SST 895 11.7					
occurrence	PAN 3471 14.7						PAN 3471 6.0					
	SST 835 14.3						PAN 3497 4.7					
Number of samples	3						3					
MIXOGRAM (Quadromat Junior)												
	ave	min	max	stdev			ave	min	max	stdev		
Peak time, min	2.4	2.0	2.9	0.45			2.8	2.5	2.9	0.23		
Tail height (6 min), mm	45	41	47	3.21			50	49	51	1.00		
Number of samples	3						3					
	COMPOSITE SAMPLES											
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
Bühler Extraction, %	71.8	-	-	-	-	-	69.3	-	-	-	-	-
FLOUR												
Protein (12% mb), %	12.7	-	-	-	-	-	12.3	-	-	-	-	-
Ash (db), %	0.62	-	-	-	-	-	0.67	-	-	-	-	-
Colour, KJ (wet)	-4.8	-	-	-	-	-	-4.5	-	-	-	-	-
Colour, Konica Minolta CM5 (dry)												
L*	93.83	-	-	-	-	-	93.66	-	-	-	-	-
a*	0.49	-	-	-	-	-	0.48	-	-	-	-	-
b*	9.50	-	-	-	-	-	10.14	-	-	-	-	-
RVA												
Peak Viscosity, cP	2446	-	-	-	-	-	2288	-	-	-	-	-
Minimum viscosity (Trough), cP	1774	-	-	-	-	-	1645	-	-	-	-	-
Final Viscosity, cP	2602	-	-	-	-	-	2585	-	-	-	-	-
Peak Time, min	7.00	-	-	-	-	-	7.00	-	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	36.6	-	-	-	-	-	33.5	-	-	-	-	-
Dry gluten (14% mb), %	12.1	-	-	-	-	-	11.3	-	-	-	-	-
Gluten Index	84	-	-	-	-	-	94	-	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	64.7	-	-	-	-	-	63.6	-	-	-	-	-
Development time, min	4.7	-	-	-	-	-	5.9	-	-	-	-	-
Stability, min	4.9	-	-	-	-	-	8.4	-	-	-	-	-
Mixing tolerance index, BU	42	-	-	-	-	-	26	-	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm²	88	-	-	-	-	-	100	-	-	-	-	-
Maximum height, BU	290	-	-	-	-	-	352	-	-	-	-	-
Extensibility, mm	219	-	-	-	-	-	205	-	-	-	-	-
ALVEOGRAM												
Strength (S), cm²	37.2	-	-	-	-	-	39.1	-	-	-	-	-
Stability (P), mm	86	-	-	-	-	-	93	-	-	-	-	-
Distensibility (L), mm	112	-	-	-	-	-	95	-	-	-	-	-
Configuration ratio (P/L)	0.77	-	-	-	-	-	0.98	-	-	-	-	-
MIXOGRAM												
Peak time, min	1.9	-	-	-	-	-	2.7	-	-	-	-	-
100g BAKING TEST												
Loaf volume, cm³	1187	-	-	-	-	-	1205	-	-	-	-	-
Evaluation (see page 79)	0	-	-	-	-	-	0	-	-	-	-	-

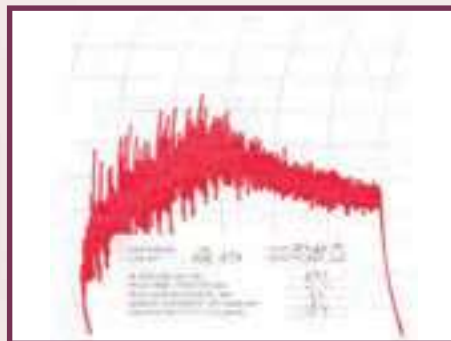
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

12

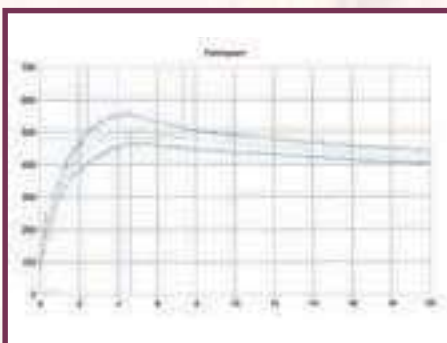


14

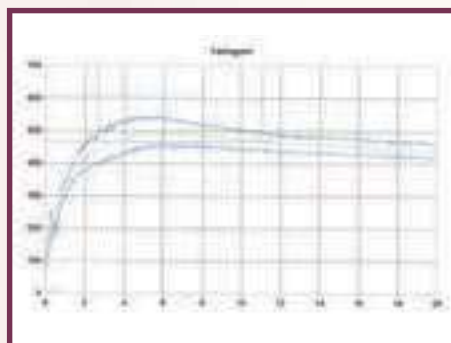


FARINOGRAM

12

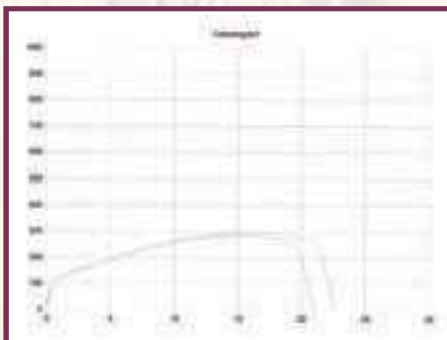


14

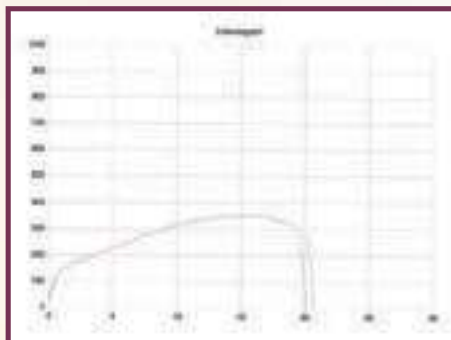


EXTENSOGRAM

12

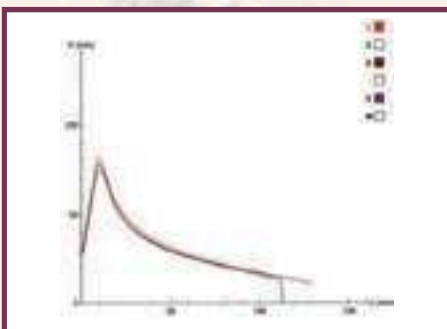


14

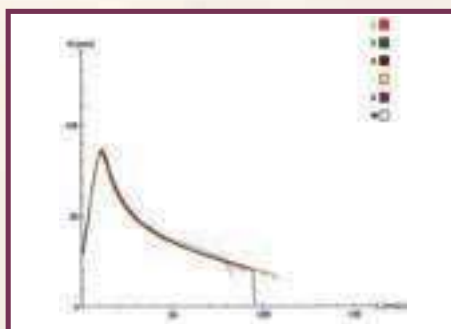


ALVEOGRAM

12



14



South African Quality data per production region

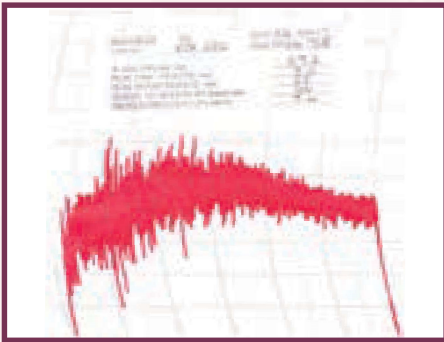
IRRIGATION WHEAT

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), %	11.5	9.2	14.5	1.67			12.0	11.5	12.7	0.62		
Falling number, sec	368	236	460	87.24			399	381	431	21.97		
1000 Kernel mass (13% mb), g	36.5	31.2	40.6	4.27			40.2	37.6	43.1	2.55		
Hectolitre mass (dirty), kg/hl	80.8	77.3	85.0	2.58			83.0	82.1	83.7	0.76		
Screenings (<1.8 mm sieve), %	1.12	0.21	2.50	1.09			1.27	0.20	2.20	0.85		
Total damaged kernels, %	0.25	0.08	0.50	0.14			0.51	0.36	0.56	0.10		
Combined deviations, %	1.72	0.55	3.46	1.39			2.07	0.56	3.32	1.17		
Number of samples	8						4					
CULTIVARS												
	PAN 3400 33.9						SST 884 27.3					
cultivars	PAN 3368 14.4						SST 8135 20.3					
with highest %	SST 884 13.6						SST 8154 14.3					
occurrence	PAN 3111 9.5						SST 895 11.0					
	PAN 3471 8.0						PAN 3471 7.5					
Number of samples	8						4					
MIXOGRAM (Quadromat Junior)												
	ave	min	max	stdev			ave	min	max	stdev		
Peak time, min	3.0	2.3	4.2	0.59			2.4	2.3	2.7	0.19		
Tail height (6 min), mm	43	34	48	4.80			47	45	48	1.50		
Number of samples	8						4					
	COMPOSITE SAMPLES											
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
Bühler Extraction, %	69.7	71.9	69.0	66.6	-	-	73.2	72.5	-	-	-	-
FLOUR												
Protein (12% mb), %	11.9	10.5	9.2	7.8	-	-	11.9	10.8	-	-	-	-
Ash (db), %	0.53	0.61	0.57	0.56	-	-	0.60	0.61	-	-	-	-
Colour, KJ (wet)	-4.6	-4.7	-4.7	-4.8	-	-	-4.8	-4.9	-	-	-	-
Colour, Konica Minolta CM5 (dry)												
L*	94.02	93.80	93.93	93.88	-	-	93.84	94.06	-	-	-	-
a*	0.45	0.47	0.44	0.37	-	-	0.50	0.44	-	-	-	-
b*	11.00	10.13	10.76	10.75	-	-	10.92	10.34	-	-	-	-
RVA												
Peak Viscosity, cP	2102	2256	1633	1254	-	-	2244	2373	-	-	-	-
Minimum viscosity (Trough), cP	1565	1622	1499	993	-	-	1815	1802	-	-	-	-
Final Viscosity, cP	2490	2538	1909	1480	-	-	2585	2701	-	-	-	-
Peak Time, min	7.00	7.00	6.67	5.93	-	-	7.00	7.00	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	32.6	29.3	23.2	-	-	-	32.8	29.1	-	-	-	-
Dry gluten (14% mb), %	10.8	9.9	7.7	-	-	-	11.2	9.7	-	-	-	-
Gluten Index	92	96	99	-	-	-	96	97	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	62.6	61.8	57.3	53.8	-	-	60.7	60.6	-	-	-	-
Development time, min	6.0	5.9	4.3	1.4	-	-	5.0	4.9	-	-	-	-
Stability, min	8.8	7.0	7.9	3.0	-	-	6.8	6.2	-	-	-	-
Mixing tolerance index, BU	29	44	33	50	-	-	43	45	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm²	92	100	75	69	-	-	102	93	-	-	-	-
Maximum height, BU	327	396	339	374	-	-	340	356	-	-	-	-
Extensibility, mm	207	187	159	132	-	-	220	190	-	-	-	-
ALVEOGRAM												
Strength (S), cm²	39.8	35.3	32.0	21.7	-	-	30.4	36.5	-	-	-	-
Stability (P), mm	91	90	76	72	-	-	75	67	-	-	-	-
Distensibility (L), mm	102	91	101	59	-	-	108	157	-	-	-	-
Configuration ratio (P/L)	0.89	0.99	0.75	1.22	-	-	0.69	0.43	-	-	-	-
MIXOGRAM												
Peak time, min	2.4	2.6	3.3	4.5	-	-	2.3	2.4	-	-	-	-
100g BAKING TEST												
Loaf volume, cm³	1054	984	911	815	-	-	1217	1045	-	-	-	-
Evaluation (see page 79)	0	0	0	0	-	-	0	0	-	-	-	-

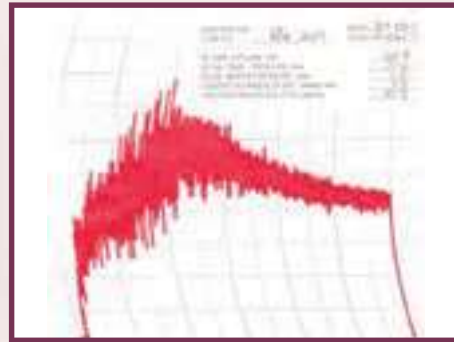
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

15

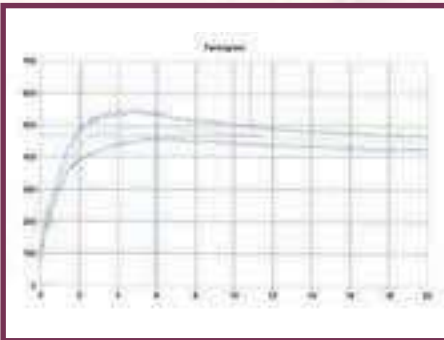


16

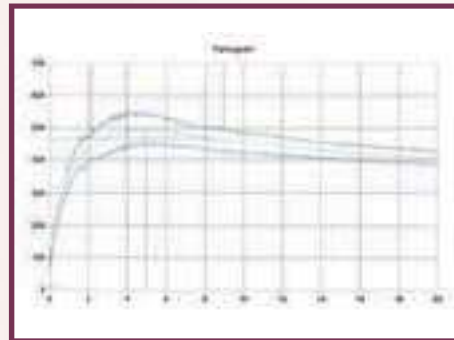


FARINOGRAM

15

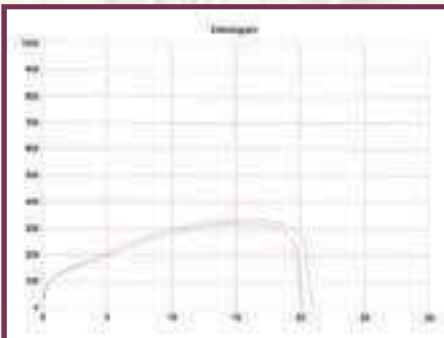


16

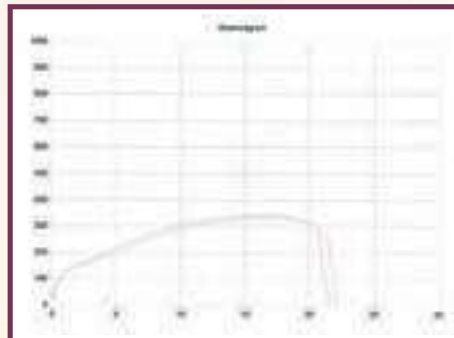


EXTENSOGRAM

15

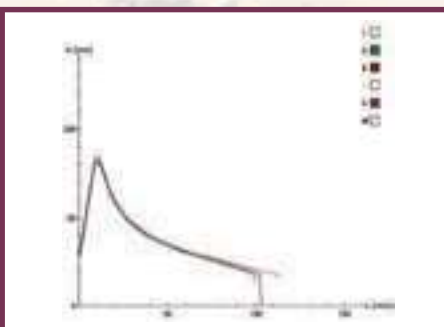


16

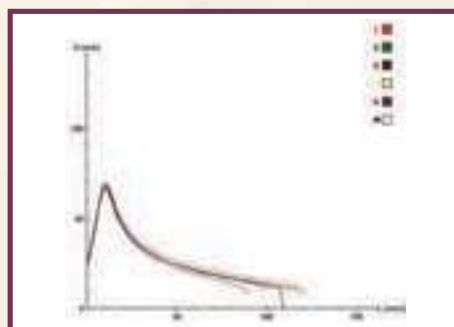


ALVEOGRAM

15



16



South African Quality data per production region

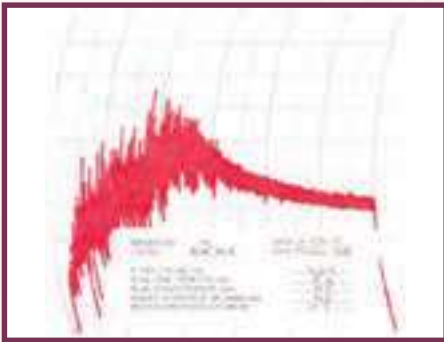
IRRIGATION WHEAT

PRODUCTION REGION	(17) North West Central-Northern Region (Ottosdal)						(18) North West Central Region (Ventersdorp)					
WHEAT	ave	min	max	stdev	ave	min	max	stdev	ave	min	max	stdev
Protein (12% mb), %	13.0	12.8	13.1	0.21	11.9	11.7	12.0	0.21				
Falling number, sec	390	367	413	32.53	418	405	431	18.38				
1000 Kernel mass (13% mb), g	39.3	38.5	40.0	1.06	40.8	40.5	41.0	0.35				
Hectolitre mass (dirty), kg/hl	81.8	81.5	82.1	0.42	81.8	81.7	81.9	0.14				
Screenings (<1.8 mm sieve), %	1.23	1.03	1.43	0.28	0.70	0.66	0.74	0.06				
Total damaged kernels, %	0.74	0.58	0.90	0.23	0.41	0.38	0.44	0.04				
Combined deviations, %	2.53	2.51	2.55	0.03	1.80	1.70	1.90	0.14				
Number of samples	2						2					
CULTIVARS												
	SST 884 39.0						SST 884 35.5					
cultivars	SST 8135 24.5						SST 895 27.5					
with highest %	SST 835 18.5						SST 8154 21.5					
occurrence	PAN 3400 7.5						SST 8135 8.0					
	SST 895 7.0						PAN 3471 7.5					
Number of samples	2						2					
MIXOGRAM (Quadromat Junior)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	2.4	2.4	2.4	0.00	2.5	2.3	2.6	0.21				
Tail height (6 min), mm	45	44	45	0.71	42	41	42	0.71				
Number of samples	2						2					
	COMPOSITE SAMPLES											
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
Bühler Extraction, %	72.3	-	-	-	-	-	71.5	-	-	-	-	-
FLOUR												
Protein (12% mb), %	11.8	-	-	-	-	-	11.3	-	-	-	-	-
Ash (db), %	0.66	-	-	-	-	-	0.63	-	-	-	-	-
Colour, KJ (wet)	-4.8	-	-	-	-	-	-4.7	-	-	-	-	-
Colour, Konica Minolta CM5 (dry)												
L*	94.06	-	-	-	-	-	94.00	-	-	-	-	-
a*	0.49	-	-	-	-	-	0.48	-	-	-	-	-
b*	9.85	-	-	-	-	-	9.49	-	-	-	-	-
RVA												
Peak Viscosity, cP	2264	-	-	-	-	-	2116	-	-	-	-	-
Minimum viscosity (Trough), cP	1648	-	-	-	-	-	1569	-	-	-	-	-
Final Viscosity, cP	2599	-	-	-	-	-	2345	-	-	-	-	-
Peak Time, min	7.00	-	-	-	-	-	7.00	-	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	32.9	-	-	-	-	-	30.1	-	-	-	-	-
Dry gluten (14% mb), %	11.0	-	-	-	-	-	10.4	-	-	-	-	-
Gluten Index	92	-	-	-	-	-	97	-	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	60.4	-	-	-	-	-	60.4	-	-	-	-	-
Development time, min	4.1	-	-	-	-	-	3.8	-	-	-	-	-
Stability, min	5.2	-	-	-	-	-	4.3	-	-	-	-	-
Mixing tolerance index, BU	54	-	-	-	-	-	52	-	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm²	93	-	-	-	-	-	-	-	-	-	-	-
Maximum height, BU	318	-	-	-	-	-	-	-	-	-	-	-
Extensibility, mm	213	-	-	-	-	-	-	-	-	-	-	-
ALVEOGRAM												
Strength (S), cm²	34.0	-	-	-	-	-	27.8	-	-	-	-	-
Stability (P), mm	69	-	-	-	-	-	68	-	-	-	-	-
Distensibility (L), mm	143	-	-	-	-	-	115	-	-	-	-	-
Configuration ratio (P/L)	0.48	-	-	-	-	-	0.59	-	-	-	-	-
MIXOGRAM												
Peak time, min	2.3	-	-	-	-	-	2.1	-	-	-	-	-
100g BAKING TEST												
Loaf volume, cm³	1176	-	-	-	-	-	1085	-	-	-	-	-
Evaluation (see page 79)	0	-	-	-	-	-	0	-	-	-	-	-

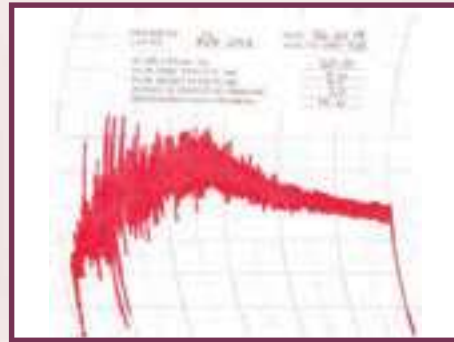
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

17

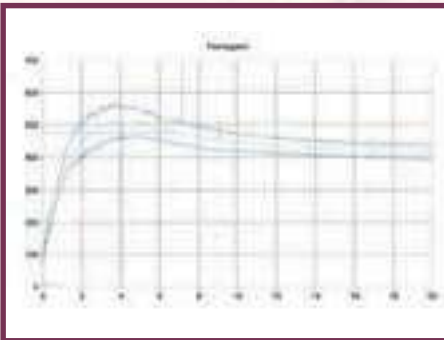


18

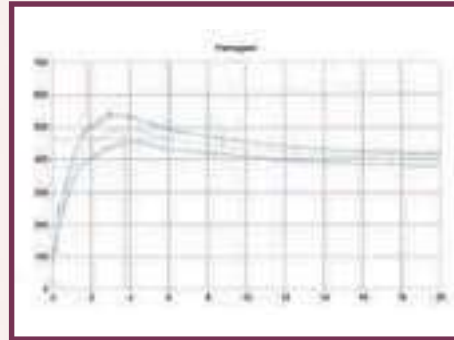


FARINOGRAM

17

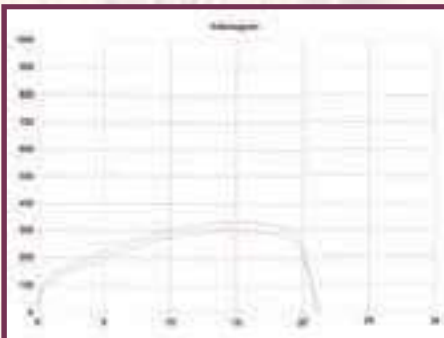


18



EXTENSOGRAM

17

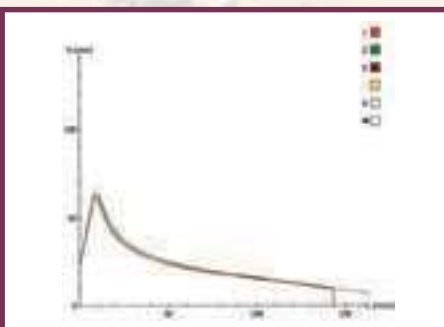


18

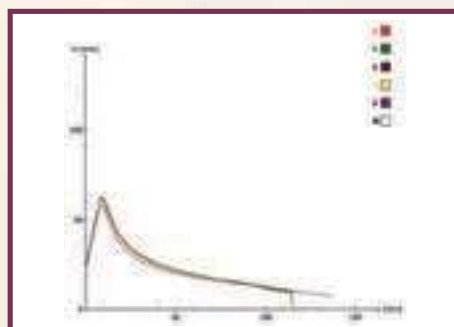


ALVEOGRAM

17



18



South African Quality data per production region

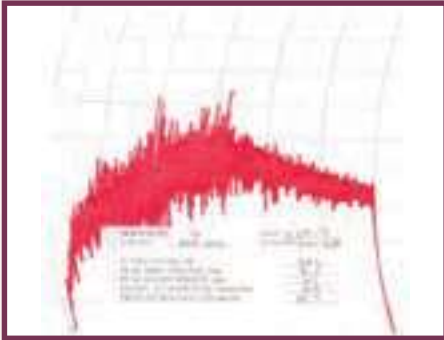
IRRIGATION WHEAT

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), %	12.1	10.8	12.7	0.67	12.1	10.7	14.4	0.97				
Falling number, sec	403	372	437	20.57	424	345	568	52.00				
1000 Kernel mass (13% mb), g	38.0	36.1	40.1	1.52	43.4	38.7	54.3	3.73				
Hectolitre mass (dirty), kg/hl	82.4	81.2	83.5	0.75	82.6	79.1	86.3	1.90				
Screenings (<1.8 mm sieve), %	1.45	0.61	3.00	1.02	1.20	0.12	2.38	0.80				
Total damaged kernels, %	0.51	0.08	0.98	0.33	0.85	0.12	4.12	0.97				
Combined deviations, %	2.34	1.16	4.38	1.31	2.32	0.44	4.32	1.22				
Number of samples	7				18							
CULTIVARS												
	SST 843		25.6		SST 884		27.9					
cultivars	SST 884		15.1		SST 8135		14.5					
with highest %	SST 895		13.3		DUZI		12.8					
occurrence	SST 8154		10.7		SST 8154		9.9					
	PAN 3471		9.3		PAN 3471		9.2					
Number of samples	7				18							
MIXOGRAM (Quadromat Junior)												
	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	3.1	2.7	3.8	0.37	2.7	1.9	3.5	0.33				
Tail height (6 min), mm	49	47	52	1.60	45	43	48	1.50				
Number of samples	7				18							
	COMPOSITE SAMPLES											
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
Bühler Extraction, %	71.9	72.4	-	-	-	-	72.2	72.9	72.8	-	-	-
FLOUR												
Protein (12% mb), %	11.4	10.7	-	-	-	-	11.6	10.4	9.6	-	-	-
Ash (db), %	0.59	0.59	-	-	-	-	0.58	0.61	0.61	-	-	-
Colour, KJ (wet)	-4.6	-4.9	-	-	-	-	-4.5	-4.7	-4.5	-	-	-
Colour, Konica Minolta CM5 (dry)												
L*	93.68	93.93	-	-	-	-	93.88	93.85	93.80	-	-	-
a*	0.49	0.45	-	-	-	-	0.44	0.44	0.42	-	-	-
b*	10.13	9.57	-	-	-	-	9.65	9.77	9.70	-	-	-
RVA												
Peak Viscosity, cP	2335	2304	-	-	-	-	2260	2382	2591	-	-	-
Minimum viscosity (Trough), cP	1691	1704	-	-	-	-	1805	1761	1957	-	-	-
Final Viscosity, cP	2684	2650	-	-	-	-	2494	2685	2855	-	-	-
Peak Time, min	7.00	7.00	-	-	-	-	7.00	7.00	7.00	-	-	-
GLUTEN												
Wet gluten (14% mb), %	31.3	28.0	-	-	-	-	33.1	29.2	26.6	-	-	-
Dry gluten (14% mb), %	10.4	9.5	-	-	-	-	10.9	9.5	8.8	-	-	-
Gluten Index	93	97	-	-	-	-	86	88	95	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	61.0	61.2	-	-	-	-	61.3	60.7	59.8	-	-	-
Development time, min	5.8	5.5	-	-	-	-	4.6	4.2	4.8	-	-	-
Stability, min	7.3	7.7	-	-	-	-	5.9	5.0	5.6	-	-	-
Mixing tolerance index, BU	42	41	-	-	-	-	43	49	50	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm²	106	101	-	-	-	-	91	75	71	-	-	-
Maximum height, BU	403	396	-	-	-	-	321	296	333	-	-	-
Extensibility, mm	198	190	-	-	-	-	207	180	158	-	-	-
ALVEOGRAM												
Strength (S), cm²	39.8	36.4	-	-	-	-	34.4	32.4	28.0	-	-	-
Stability (P), mm	82	89	-	-	-	-	74	76	81	-	-	-
Distensibility (L), mm	119	91	-	-	-	-	129	115	84	-	-	-
Configuration ratio (P/L)	0.69	0.98	-	-	-	-	0.57	0.66	0.96	-	-	-
MIXOGRAM												
Peak time, min	2.8	2.9	-	-	-	-	2.2	2.3	2.6	-	-	-
100g BAKING TEST												
Loaf volume, cm³	1136	1026	-	-	-	-	1114	972	929	-	-	-
Evaluation (see page 79)	0	0	-	-	-	-	0	0	0	-	-	-

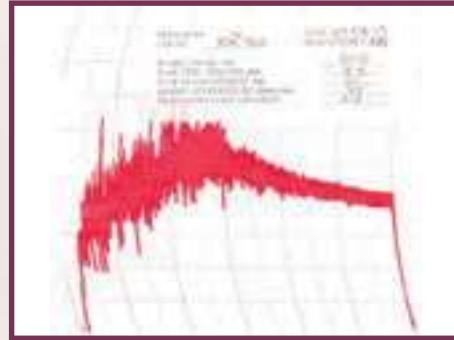
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

19

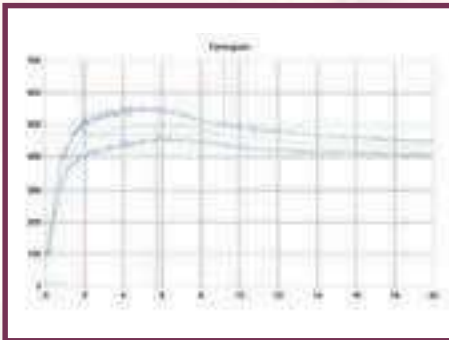


20

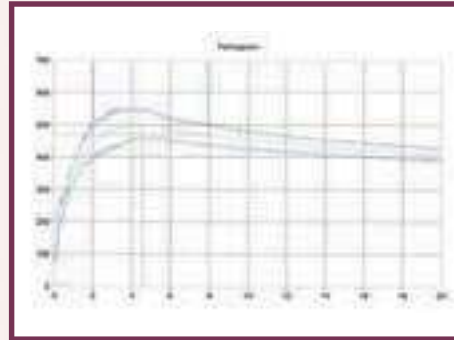


FARINOGRAM

19

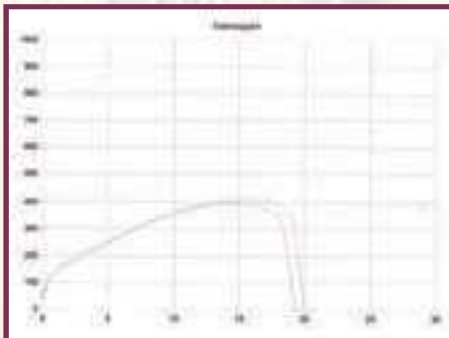


20

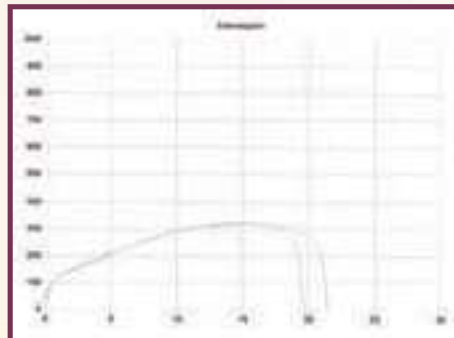


EXTENSOGRAM

19

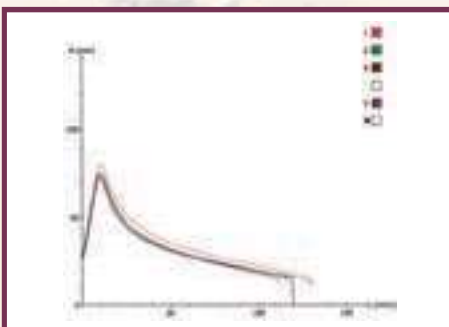


20

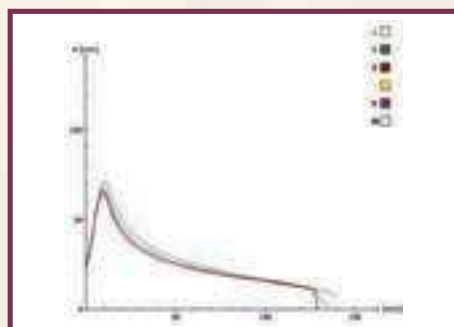


ALVEOGRAM

19



20



South African Quality data per production region

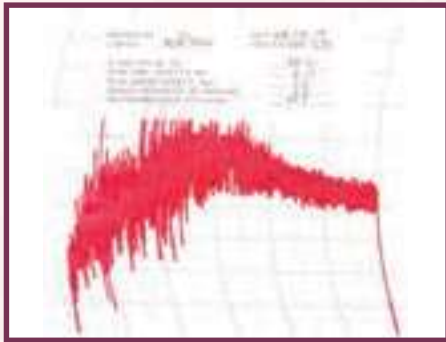
SUMMER RAINFALL AND IRRIGATION WHEAT

PRODUCTION REGION	(21) Free State North-Western Region (Viljoenskroon)						(22) Free State North-Western Region (Bothaville)					
	ave	min	max	stdev			ave	min	max	stdev		
WHEAT												
Protein (12% mb), %	12.2	11.8	12.5	0.49			11.7	10.7	12.6	0.95		
Falling number, sec	456	452	460	5.66			387	380	396	8.08		
1000 Kernel mass (13% mb), g	38.8	38.2	39.4	0.85			40.1	38.8	41.0	1.15		
Hectolitre mass (dirty), kg/hl	83.3	82.9	83.7	0.57			82.0	81.8	82.2	0.20		
Screenings (<1.8 mm sieve), %	2.18	2.12	2.24	0.08			1.75	1.66	1.84	0.09		
Total damaged kernels, %	0.91	0.84	0.98	0.10			0.59	0.44	0.78	0.17		
Combined deviations, %	3.35	3.34	3.36	0.01			3.05	2.98	3.20	0.13		
Number of samples	2						3					
CULTIVARS												
	SST 884 32.5						PAN 3497 29.0					
	SST 835 21.0						SST 8135 19.0					
	SST 8154 16.5						SST 8154 19.0					
	PAN 3471 11.5						PAN 3471 13.0					
occurrence	PAN 3497 11.0						SST 835 9.3					
Number of samples	2						3					
MIXOGRAM (Quadromat Junior)												
	ave	min	max	stdev			ave	min	max	stdev		
Peak time, min	2.9	2.7	3.0	0.21			2.5	2.4	2.7	0.15		
Tail height (6 min), mm	48	48	48	0.00			48	46	50	2.00		
Number of samples	2						3					
CLASS AND GRADE	COMPOSITE SAMPLES											
	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	73.0	72.6	-	-	-	-	74.3	74.7	74.7	-	-	-
FLOUR												
Protein (12% mb), %	11.5	10.7	-	-	-	-	11.4	10.8	9.7	-	-	-
Ash (db), %	0.61	0.60	-	-	-	-	0.60	0.61	0.62	-	-	-
Colour, KJ (wet)	-4.6	-4.7	-	-	-	-	-4.8	-4.8	-4.9	-	-	-
Colour, Konica Minolta CM5 (dry)												
L*	93.80	93.75	-	-	-	-	93.73	93.70	93.82	-	-	-
a*	0.44	0.43	-	-	-	-	0.46	0.50	0.52	-	-	-
b*	9.55	9.55	-	-	-	-	11.39	11.43	11.35	-	-	-
RVA												
Peak Viscosity, cP	2322	2403	-	-	-	-	2095	2116	1996	-	-	-
Minimum viscosity (Trough), cP	1695	1787	-	-	-	-	1624	1650	1604	-	-	-
Final Viscosity, cP	2587	2750	-	-	-	-	2395	2439	2270	-	-	-
Peak Time, min	7.00	7.00	-	-	-	-	7.00	7.00	7.00	-	-	-
GLUTEN												
Wet gluten (14% mb), %	32.2	29.0	-	-	-	-	31.6	29.1	26.8	-	-	-
Dry gluten (14% mb), %	10.8	9.4	-	-	-	-	10.1	9.6	8.6	-	-	-
Gluten Index	90	96	-	-	-	-	95	95	90	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	60.6	60.6	-	-	-	-	61.2	60.6	58.9	-	-	-
Development time, min	5.3	4.7	-	-	-	-	5.8	5.2	4.5	-	-	-
Stability, min	6.1	6.6	-	-	-	-	7.8	6.6	5.2	-	-	-
Mixing tolerance index, BU	51	42	-	-	-	-	38	43	51	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm²	110	100	-	-	-	-	103	98	75	-	-	-
Maximum height, BU	364	376	-	-	-	-	348	338	288	-	-	-
Extensibility, mm	219	196	-	-	-	-	215	214	185	-	-	-
ALVEOGRAM												
Strength (S), cm²	34.6	34.9	-	-	-	-	38.5	31.7	23.1	-	-	-
Stability (P), mm	78	86	-	-	-	-	74	70	62	-	-	-
Distensibility (L), mm	111	94	-	-	-	-	131	118	100	-	-	-
Configuration ratio (P/L)	0.70	0.91	-	-	-	-	0.56	0.59	0.62	-	-	-
MIXOGRAM												
Peak time, min	2.5	2.8	-	-	-	-	2.4	2.4	2.4	-	-	-
100g BAKING TEST												
Loaf volume, cm³	1102	1054	-	-	-	-	1166	1113	1085	-	-	-
Evaluation (see page 79)	0	0	-	-	-	-	0	0	0	-	-	-

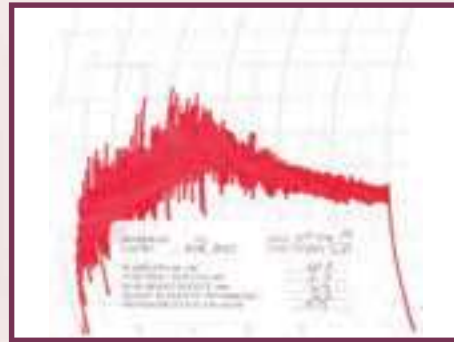
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

21

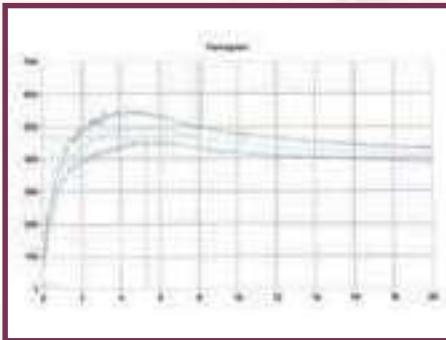


22

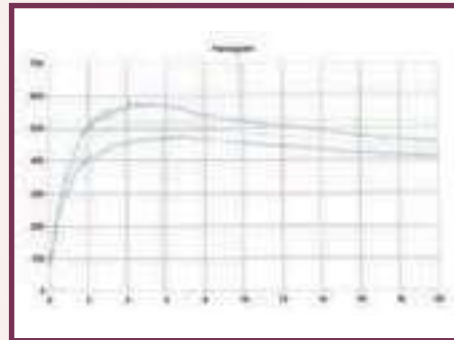


FARINOGRAM

21

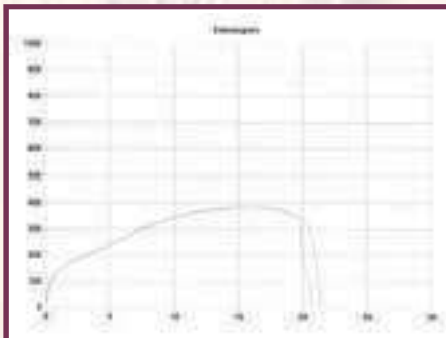


22

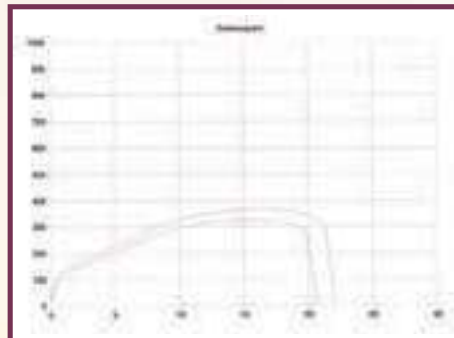


EXTENSOGRAM

21

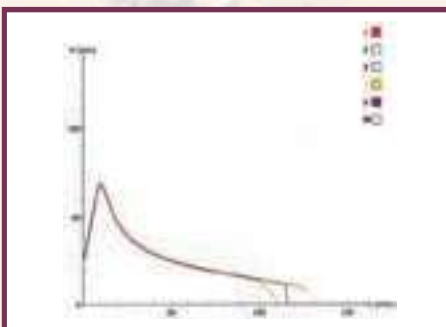


22

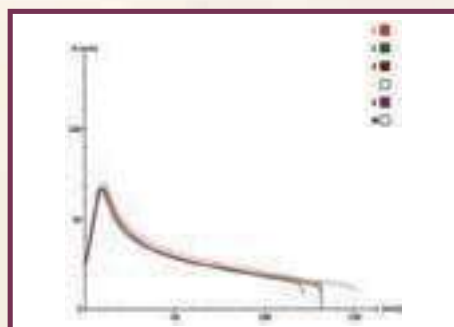


ALVEOGRAM

21



22



South African Quality data per production region

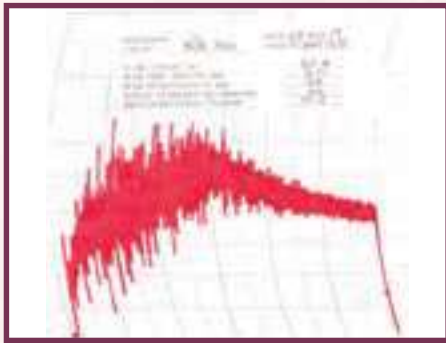
SUMMER RAINFALL AND IRRIGATION WHEAT

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), %	12.9	11.4	14.3	2.05	12.8	11.0	16.0	1.42				
Falling number, sec	504	499	509	7.07	473	310	565	80.46				
1000 Kernel mass (13% mb), g	39.2	38.2	40.2	1.41	35.2	28.7	45.4	5.02				
Hectolitre mass (dirty), kg/hl	83.1	82.3	83.8	1.06	81.4	76.6	83.8	2.09				
Screenings (<1.8 mm sieve), %	1.61	0.52	2.70	1.54	2.26	0.17	7.61	2.61				
Total damaged kernels, %	0.95	0.18	1.72	1.09	0.42	0.08	1.18	0.36				
Combined deviations, %	2.81	0.70	4.92	2.98	3.30	0.46	8.83	3.19				
Number of samples	2				9							
CULTIVARS cultivars with highest % occurrence	SST 884 50.0				PAN 3471 21.6							
	PAN 3111 45.0				PAN 3111 13.6							
	PAN 3471 5.0				SCHEEPERS 69 13.1							
					PAN 3400 12.7							
					PAN 3497 6.4							
Number of samples	2				9							
MIXOGRAM (Quadromat Junior)	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	2.6	2.3	2.9	0.42	2.8	1.2	3.9	0.72				
Tail height (6 min), mm	46	44	48	2.83	46	38	56	4.97				
Number of samples	2				9							
CLASS AND GRADE	COMPOSITE SAMPLES											
	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
	70.6	71.6	-	-	-	-	69.8	71.9	-	-	-	-
	13.1	10.3	-	-	-	-	11.5	10.2	-	-	-	-
	0.61	0.62	-	-	-	-	0.60	0.64	-	-	-	-
	-4.1	-4.6	-	-	-	-	-4.3	-4.5	-	-	-	-
	93.42	93.79	-	-	-	-	93.55	93.75	-	-	-	-
	0.49	0.48	-	-	-	-	0.43	0.39	-	-	-	-
	9.62	9.69	-	-	-	-	10.17	9.77	-	-	-	-
	2090	2416	-	-	-	-	2196	2298	-	-	-	-
	1545	1816	-	-	-	-	1652	1711	-	-	-	-
	2227	2635	-	-	-	-	2417	2612	-	-	-	-
	7.00	7.00	-	-	-	-	7.00	7.00	-	-	-	-
GLUTEN	38.9	28.6	-	-	-	-	31.1	27.7	-	-	-	-
	13.1	9.3	-	-	-	-	10.5	9.0	-	-	-	-
	71	93	-	-	-	-	92	90	-	-	-	-
	63.9	59.9	-	-	-	-	60.9	60.1	-	-	-	-
FARINOGRAM	4.8	4.9	-	-	-	-	5.5	3.5	-	-	-	-
	4.8	6.5	-	-	-	-	7.1	4.5	-	-	-	-
	47	44	-	-	-	-	43	59	-	-	-	-
	89	99	-	-	-	-	95	72	-	-	-	-
EXTENSOGRAM (45 min pull)	301	403	-	-	-	-	373	296	-	-	-	-
	211	178	-	-	-	-	182	171	-	-	-	-
	37.8	30.3	-	-	-	-	36.9	26.5	-	-	-	-
ALVEOGRAM	88	88	-	-	-	-	90	77	-	-	-	-
	107	77	-	-	-	-	95	89	-	-	-	-
	0.82	1.14	-	-	-	-	0.95	0.87	-	-	-	-
	2.0	2.8	-	-	-	-	2.6	2.3	-	-	-	-
100g BAKING TEST	1090	1026	-	-	-	-	991	1064	-	-	-	-
	0	0	-	-	-	-	0	0	-	-	-	-

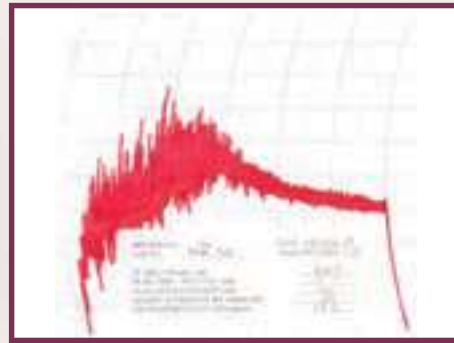
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

23

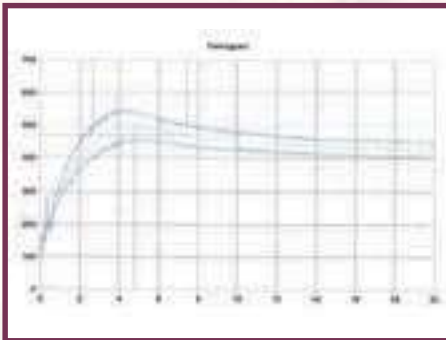


24

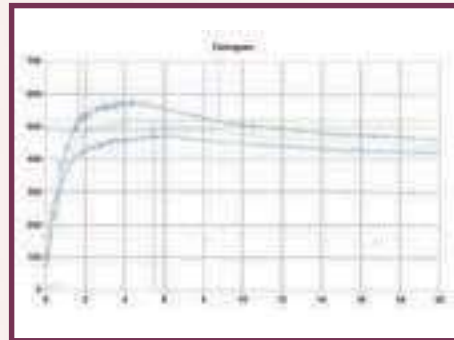


FARINOGRAM

23

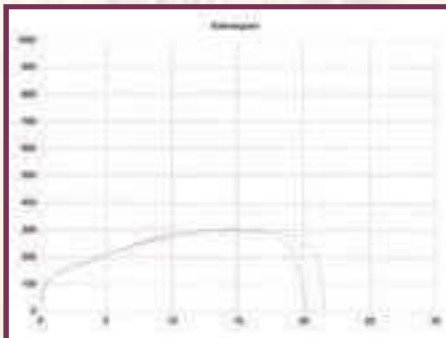


24

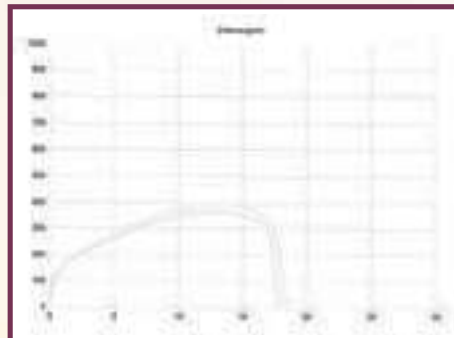


EXTENSOGRAM

23

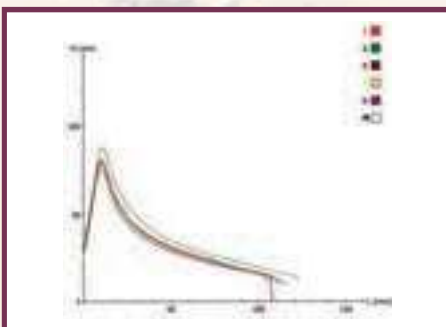


24

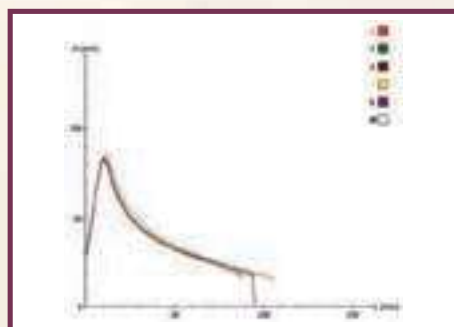


ALVEOGRAM

23



24



South African Quality data per production region

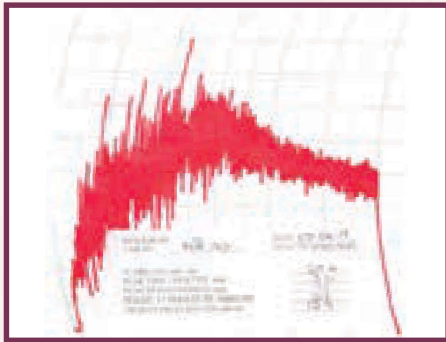
SUMMER RAINFALL AND IRRIGATION WHEAT

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), %	13.5	13.0	14.3	0.45	13.5	11.0	16.4	2.22				
Falling number, sec	405	360	433	25.48	356	304	415	46.45				
1000 Kernel mass (13% mb), g	35.9	29.0	39.2	3.06	34.0	28.0	38.9	4.55				
Hectolitre mass (dirty), kg/hl	81.5	80.3	82.5	0.73	78.5	76.3	79.9	1.55				
Screenings (<1.8 mm sieve), %	2.02	1.79	2.40	0.19	1.18	0.19	2.56	1.15				
Total damaged kernels, %	0.29	0.12	0.46	0.11	0.19	0.08	0.30	0.10				
Combined deviations, %	2.80	2.47	3.42	0.32	1.97	0.83	3.40	1.20				
Number of samples	8						4					
CULTIVARS	PAN 3368 22.4						PAN 3161 35.0					
cultivars	SST 374 20.3						SST 374 25.3					
with highest %	PAN 3161 15.5						ELANDS 13.5					
occurrence	PAN 3111 12.6						SST 356 8.3					
	ELANDS 10.5						PAN 3368 7.3					
Number of samples	8						4					
MIXOGRAM (Quadromat Junior)	ave	min	max	stdev	ave	min	max	stdev				
Peak time, min	3.0	2.7	3.8	0.37	3.0	2.0	3.3	0.65				
Tail height (6 min), mm	54	52	61	3.01	50	44	55	5.32				
Number of samples	8						4					
CLASS AND GRADE	COMPOSITE SAMPLES											
	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
Bühler Extraction, %	70.2	-	-	-	-	-	70.6	67.6	-	-	-	-
FLOUR												
Protein (12% mb), %	12.4	-	-	-	-	-	12.2	12.5	-	-	-	-
Ash (db), %	0.57	-	-	-	-	-	0.55	0.65	-	-	-	-
Colour, KJ (wet)	-4.3	-	-	-	-	-	-4.1	-3.7	-	-	-	-
Colour, Konica Minolta CM5 (dry)												
L*	93.40	-	-	-	-	-	93.57	92.82	-	-	-	-
a*	0.44	-	-	-	-	-	0.32	0.46	-	-	-	-
b*	10.65	-	-	-	-	-	10.03	10.52	-	-	-	-
RVA												
Peak Viscosity, cP	2172	-	-	-	-	-	2301	2470	-	-	-	-
Minimum viscosity (Trough), cP	1537	-	-	-	-	-	1723	1696	-	-	-	-
Final Viscosity, cP	2491	-	-	-	-	-	2564	2895	-	-	-	-
Peak Time, min	7.00	-	-	-	-	-	7.00	7.00	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	34.2	-	-	-	-	-	33.2	34.5	-	-	-	-
Dry gluten (14% mb), %	11.7	-	-	-	-	-	11.3	11.5	-	-	-	-
Gluten Index	96	-	-	-	-	-	97	90	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	63.2	-	-	-	-	-	61.7	61.6	-	-	-	-
Development time, min	7.0	-	-	-	-	-	8.0	5.3	-	-	-	-
Stability, min	10.2	-	-	-	-	-	12.6	10.2	-	-	-	-
Mixing tolerance index, BU	30	-	-	-	-	-	27	17	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm²	109	-	-	-	-	-	121	77	-	-	-	-
Maximum height, BU	379	-	-	-	-	-	443	301	-	-	-	-
Extensibility, mm	210	-	-	-	-	-	204	182	-	-	-	-
ALVEOGRAM												
Strength (S), cm²	46.2	-	-	-	-	-	50.8	35.5	-	-	-	-
Stability (P), mm	102	-	-	-	-	-	99	88	-	-	-	-
Distensibility (L), mm	98	-	-	-	-	-	110	86	-	-	-	-
Configuration ratio (P/L)	1.04	-	-	-	-	-	0.90	1.02	-	-	-	-
MIXOGRAM												
Peak time, min	2.8	-	-	-	-	-	3.1	2.3	-	-	-	-
100g BAKING TEST												
Loaf volume, cm³	1071	-	-	-	-	-	1073	1105	-	-	-	-
Evaluation (see page 79)	0	-	-	-	-	-	0	0	-	-	-	-

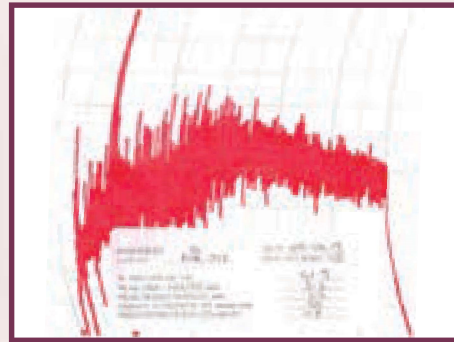
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

25

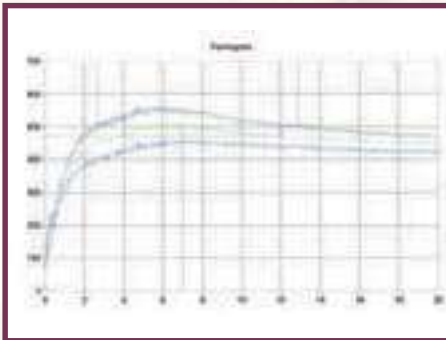


26

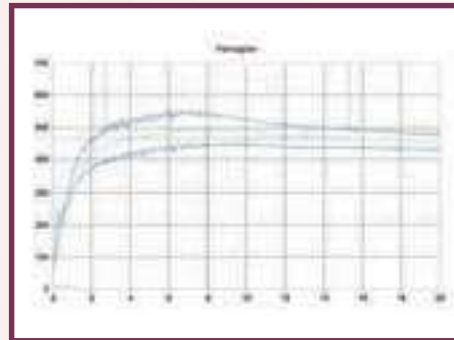


FARINOGRAM

25

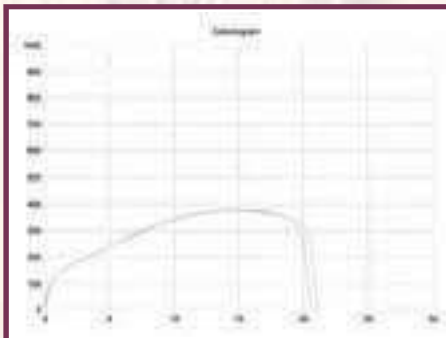


26

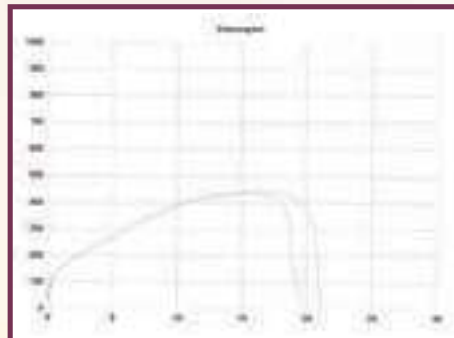


EXTENSOGRAM

25

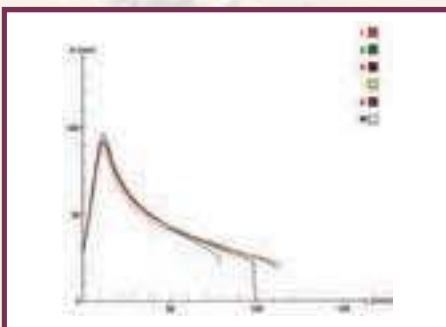


26

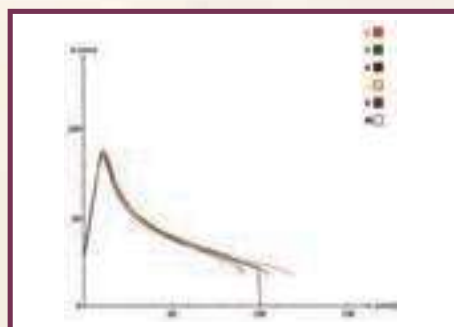


ALVEOGRAM

25



26



South African Quality data per production region

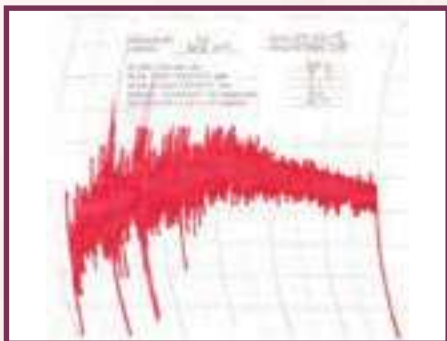
SUMMER RAINFALL AND IRRIGATION WHEAT

PRODUCTION REGION	(28) Free State Eastern Region						(29) Mpumalanga Southern Region					
WHEAT												
	ave	min	max	stdev			ave	min	max	stdev		
Protein (12% mb), %	13.4	12.1	15.3	1.26			11.9	11.7	12.0	0.21		
Falling number, sec	353	271	425	46.03			379	376	381	3.54		
1000 Kernel mass (13% mb), g	35.3	27.9	42.1	4.34			43.3	41.8	44.7	2.05		
Hectolitre mass (dirty), kg/hl	80.2	78.4	82.1	1.18			84.5	84.2	84.8	0.42		
Screenings (<1.8 mm sieve), %	1.10	0.08	3.05	0.98			1.40	1.36	1.44	0.06		
Total damaged kernels, %	0.68	0.14	1.32	0.43			0.55	0.54	0.56	0.01		
Combined deviations, %	2.30	0.55	4.81	1.65			2.24	2.14	2.34	0.14		
Number of samples	9						2					
CULTIVARS												
	PAN 3161 18.6						SST 884 37.0					
cultivars	PAN 3111 14.9						SST 8154 22.5					
with highest %	PAN 3368 12.1						SST 8135 13.0					
occurrence	ELANDS 11.7						PAN 3471 12.0					
	SST 374 8.3						SST 835 10.5					
Number of samples	9						2					
MIXOGRAM (Quadromat Junior)												
	ave	min	max	stdev			ave	min	max	stdev		
Peak time, min	3.1	2.6	4.6	0.61			3.0	2.8	3.1	0.21		
Tail height (6 min), mm	51	48	59	3.24			45	44	46	1.41		
Number of samples	9						2					
	COMPOSITE SAMPLES											
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
Bühler Extraction, %	70.5	-	-	67.2	-	-	72.8	72.3	-	-	-	-
FLOUR												
Protein (12% mb), %	11.8	-	-	13.8	-	-	11.0	10.6	-	-	-	-
Ash (db), %	0.59	-	-	0.57	-	-	0.57	0.60	-	-	-	-
Colour, KJ (wet)	-3.9	-	-	-3.8	-	-	-4.8	-4.7	-	-	-	-
Colour, Konica Minolta CM5 (dry)												
L*	93.18	-	-	93.13	-	-	94.08	93.96	-	-	-	-
a*	0.46	-	-	0.47	-	-	0.43	0.42	-	-	-	-
b*	10.07	-	-	10.86	-	-	9.30	9.41	-	-	-	-
RVA												
Peak Viscosity, cP	2161	-	-	2199	-	-	2334	2245	-	-	-	-
Minimum viscosity (Trough), cP	1619	-	-	1565	-	-	1772	1682	-	-	-	-
Final Viscosity, cP	2342	-	-	2635	-	-	2625	2519	-	-	-	-
Peak Time, min	7.00	-	-	7.00	-	-	7.00	7.00	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	32.2	-	-	36.9	-	-	30.3	28.1	-	-	-	-
Dry gluten (14% mb), %	10.7	-	-	12.5	-	-	10.1	9.8	-	-	-	-
Gluten Index	89	-	-	96	-	-	88	94	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	62.0	-	-	63.5	-	-	60.1	59.4	-	-	-	-
Development time, min	5.7	-	-	6.9	-	-	4.4	4.7	-	-	-	-
Stability, min	9.5	-	-	10.6	-	-	5.7	6.0	-	-	-	-
Mixing tolerance index, BU	26	-	-	25	-	-	50	50	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm²	103	-	-	94	-	-	95	97	-	-	-	-
Maximum height, BU	441	-	-	343	-	-	340	375	-	-	-	-
Extensibility, mm	173	-	-	199	-	-	212	196	-	-	-	-
ALVEOGRAM												
Strength (S), cm²	44.3	-	-	43.4	-	-	33.6	29.5	-	-	-	-
Stability (P), mm	96	-	-	95	-	-	68	72	-	-	-	-
Distensibility (L), mm	105	-	-	99	-	-	141	101	-	-	-	-
Configuration ratio (P/L)	0.91	-	-	0.96	-	-	0.48	0.71	-	-	-	-
MIXOGRAM												
Peak time, min	2.9	-	-	2.8	-	-	2.6	2.7	-	-	-	-
100g BAKING TEST												
Loaf volume, cm³	1033	-	-	1237	-	-	995	992	-	-	-	-
Evaluation (see page 79)	0	-	-	0	-	-	0	0	-	-	-	-

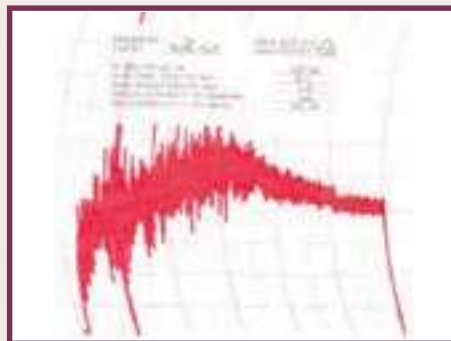
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

28

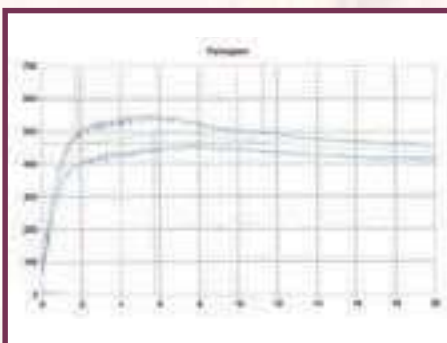


29

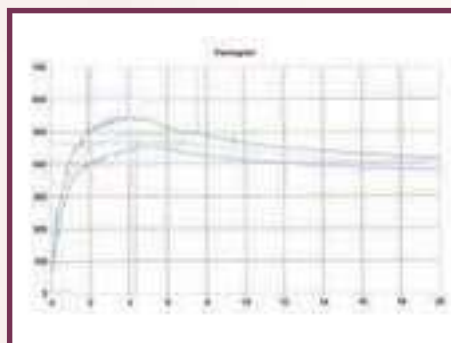


FARINOGRAM

28

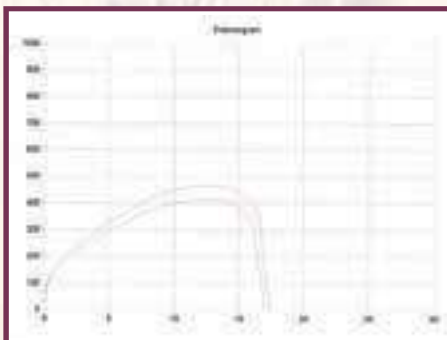


29

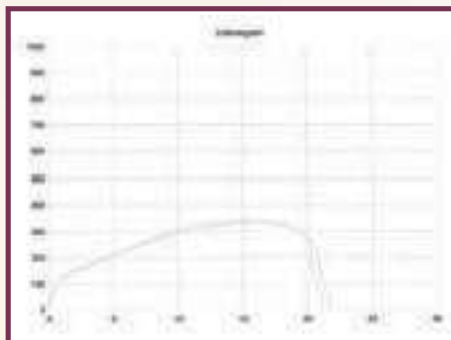


EXTENSOGRAM

28

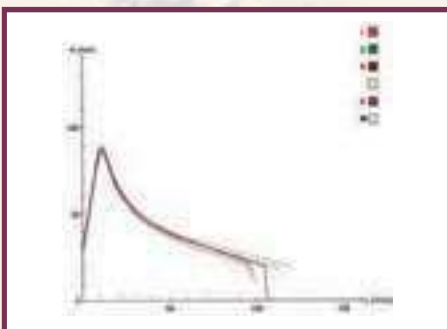


29

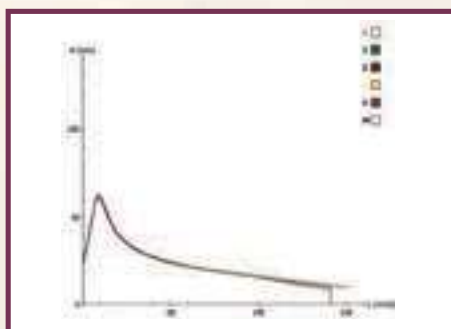


ALVEOGRAM

28



29



South African Quality data per production region

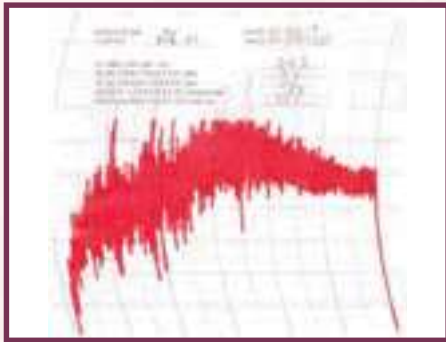
IRRIGATION WHEAT

PRODUCTION REGION	(33) Mpumalanga Northern Region						(34) Gauteng Region					
WHEAT												
	ave	min	max	stdev	ave min max stdev							
Protein (12% mb), %	12.5	11.4	14.0	0.95	11.4 10.1 12.5 0.88							
Falling number, sec	338	203	474	100.34	373 299 425 41.80							
1000 Kernel mass (13% mb), g	38.9	36.9	42.3	1.98	39.7 37.9 43.7 1.98							
Hectolitre mass (dirty), kg/hl	80.1	75.4	83.9	3.46	83.1 81.0 84.3 1.18							
Screenings (<1.8 mm sieve), %	0.94	0.54	1.42	0.35	0.94 0.48 1.53 0.44							
Total damaged kernels, %	0.68	0.08	2.20	0.79	0.79 0.32 1.40 0.43							
Combined deviations, %	1.83	1.24	3.04	0.64	1.94 1.49 2.81 0.43							
Number of samples	6						7					
CULTIVARS												
	SST 895 28.2						SST 884 36.3					
cultivars	SST 884 17.7						SST 8135 21.9					
with highest %	PAN 3471 15.0						SST 895 12.1					
occurrence	SST 835 14.5						SST 8154 10.7					
	SST 843 7.2						SST 835 9.3					
Number of samples	6						7					
MIXOGRAM (Quadromat Junior)												
	ave	min	max	stdev	ave min max stdev							
Peak time, min	3.5	3.0	4.0	0.36	3.2 2.5 3.7 0.43							
Tail height (6 min), mm	52	48	55	2.42	49 47 55 2.88							
Number of samples	6						7					
	COMPOSITE SAMPLES											
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
Bühler Extraction, %	73.0	72.1	-	-	-	-	73.2	72.3	71.6	-	-	-
FLOUR												
Protein (12% mb), %	11.8	10.1	-	-	-	-	11.5	10.5	9.6	-	-	-
Ash (db), %	0.59	0.61	-	-	-	-	0.62	0.60	0.61	-	-	-
Colour, KJ (wet)	-4.3	-4.8	-	-	-	-	-4.6	-4.4	-4.8	-	-	-
Colour, Konica Minolta CM5 (dry)												
L*	93.43	93.95	-	-	-	-	93.66	93.54	93.78	-	-	-
a*	0.48	0.47	-	-	-	-	0.45	0.42	0.39	-	-	-
b*	10.03	9.33	-	-	-	-	9.26	9.28	9.12	-	-	-
RVA												
Peak Viscosity, cP	1810	2462	-	-	-	-	2317	2273	1731	-	-	-
Minimum viscosity (Trough), cP	1616	1789	-	-	-	-	1796	1802	1497	-	-	-
Final Viscosity, cP	1976	2765	-	-	-	-	2601	2473	1870	-	-	-
Peak Time, min	6.80	7.00	-	-	-	-	7.00	7.00	6.60	-	-	-
GLUTEN												
Wet gluten (14% mb), %	31.6	26.6	-	-	-	-	32.1	28.7	25.4	-	-	-
Dry gluten (14% mb), %	10.5	9.0	-	-	-	-	10.8	9.6	8.5	-	-	-
Gluten Index	98	97	-	-	-	-	91	95	98	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	60.3	58.7	-	-	-	-	61.9	59.1	58.8	-	-	-
Development time, min	6.5	5.3	-	-	-	-	4.8	5.5	5.0	-	-	-
Stability, min	9.9	9.1	-	-	-	-	5.9	6.9	7.3	-	-	-
Mixing tolerance index, BU	35	30	-	-	-	-	51	46	48	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm²	126	101	-	-	-	-	89	90	81	-	-	-
Maximum height, BU	451	406	-	-	-	-	316	378	339	-	-	-
Extensibility, mm	215	188	-	-	-	-	207	174	172	-	-	-
ALVEOGRAM												
Strength (S), cm²	47.2	36.2	-	-	-	-	35.9	32.4	30.7	-	-	-
Stability (P), mm	80	85	-	-	-	-	74	75	72	-	-	-
Distensibility (L), mm	139	92	-	-	-	-	131	102	100	-	-	-
Configuration ratio (P/L)	0.58	0.92	-	-	-	-	0.56	0.74	0.72	-	-	-
MIXOGRAM												
Peak time, min	3.2	3.2	-	-	-	-	2.4	2.9	3.0	-	-	-
100g BAKING TEST												
Loaf volume, cm³	1144	980	-	-	-	-	1064	1030	963	-	-	-
Evaluation (see page 79)	0	0	-	-	-	-	0	0	0	-	-	-

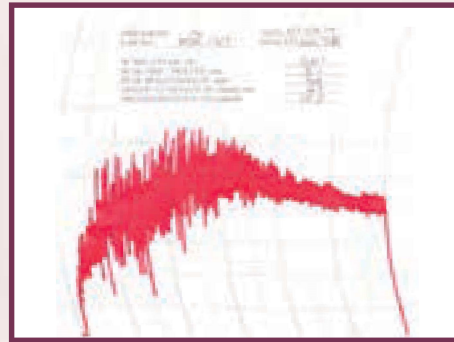
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

33

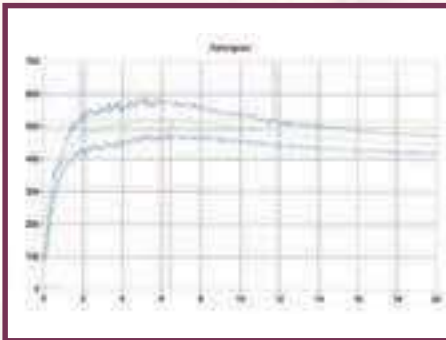


34

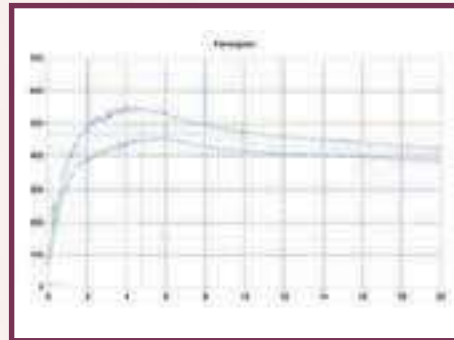


FARINOGRAM

33

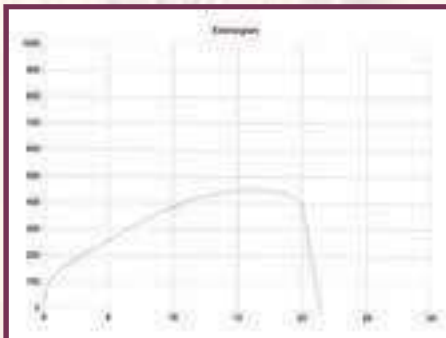


34

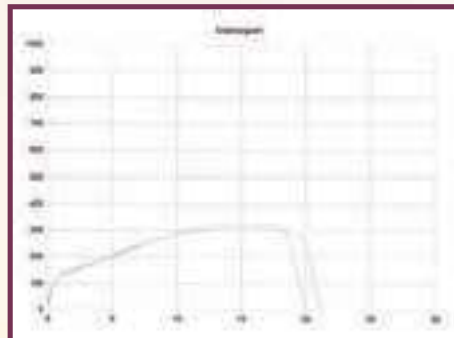


EXTENSOGRAM

33

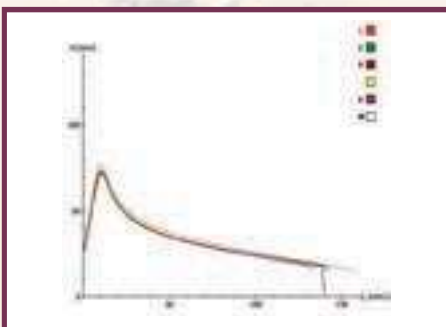


34

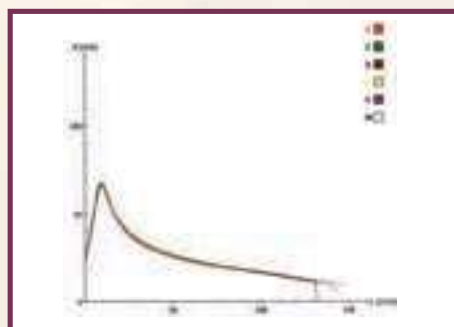


ALVEOGRAM

33



34



South African Quality data per production region

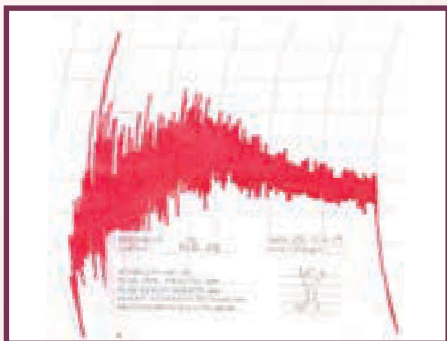
IRRIGATION WHEAT

PRODUCTION REGION	(35) Limpopo Region						(36) KwaZulu-Natas					
WHEAT												
	ave	min	max	stdev	ave min max stdev							
Protein (12% mb), %	12.0	9.9	13.8	1.09	12.6 11.8 13.5 0.66							
Falling number, sec	380	233	474	58.85	450 397 547 53.16							
1000 Kernel mass (13% mb), g	41.0	31.1	52.6	4.88	41.2 36.3 44.7 2.78							
Hectolitre mass (dirty), kg/hl	83.2	80.3	85.1	1.17	84.0 80.9 85.8 1.51							
Screenings (<1.8 mm sieve), %	0.82	0.14	2.25	0.55	1.25 0.56 2.41 0.69							
Total damaged kernels, %	0.79	0.14	5.14	1.03	0.62 0.16 1.44 0.49							
Combined deviations, %	1.81	0.83	5.36	1.03	2.42 0.90 4.51 1.21							
Number of samples	23						10					
CULTIVARS												
	SST 884 27.4						SST 806 26.6					
cultivars	DUZI 15.2						SST 8154 17.2					
with highest %	SST 8154 13.4						SST 884 15.8					
occurrence	SST 895 8.1						SST 8135 13.4					
	PAN 3471 8.0						SST 843 11.3					
Number of samples	23						10					
MIXOGRAM (Quadromat Junior)												
	ave	min	max	stdev	ave min max stdev							
Peak time, min	3.1	2.3	3.8	0.49	2.6 2.2 3.2 0.37							
Tail height (6 min), mm	51	44	62	4.82	48 45 51 2.10							
Number of samples	23						10					
	COMPOSITE SAMPLES											
CLASS AND GRADE	B1	B2	B3	B4	UT	COW	B1	B2	B3	B4	UT	COW
Bühler Extraction, %	71.6	69.8	70.9	-	72.1	-	73.1	72.3	-	-	-	-
FLOUR												
Protein (12% mb), %	11.9	10.5	9.4	-	11.1	-	12.0	10.6	-	-	-	-
Ash (db), %	0.57	0.55	0.59	-	0.56	-	0.55	0.56	-	-	-	-
Colour, KJ (wet)	-4.3	-4.6	-4.6	-	-4.4	-	-4.7	-4.6	-	-	-	-
Colour, Konica Minolta CM5 (dry)												
L*	93.42	94.22	93.57	-	93.68	-	93.64	93.62	-	-	-	-
a*	0.49	0.35	0.43	-	0.40	-	0.44	0.44	-	-	-	-
b*	10.36	9.59	10.07	-	9.82	-	9.44	10.11	-	-	-	-
RVA												
Peak Viscosity, cP	2368	2338	2380	-	1877	-	2291	2302	-	-	-	-
Minimum viscosity (Trough), cP	1809	1803	1724	-	1613	-	1712	1700	-	-	-	-
Final Viscosity, cP	2598	2618	2753	-	2077	-	2559	2607	-	-	-	-
Peak Time, min	7.00	7.00	7.00	-	6.53	-	7.00	7.00	-	-	-	-
GLUTEN												
Wet gluten (14% mb), %	33.3	29.1	25.0	-	30.8	-	34.4	29.1	-	-	-	-
Dry gluten (14% mb), %	11.5	9.8	8.1	-	10.5	-	11.5	9.6	-	-	-	-
Gluten Index	96	96	96	-	96	-	86	97	-	-	-	-
FARINOGRAM												
Water absorption (14% mb), %	62.0	60.7	60.2	-	62.2	-	63.0	62.9	-	-	-	-
Development time, min	6.2	6.2	6.0	-	4.5	-	6.0	5.5	-	-	-	-
Stability, min	8.7	9.3	8.1	-	6.3	-	6.8	5.6	-	-	-	-
Mixing tolerance index, BU	36	33	33	-	44	-	47	39	-	-	-	-
EXTENSOGRAM (45 min pull)												
Area, cm²	129	112	91	-	93	-	90	68	-	-	-	-
Maximum height, BU	411	443	396	-	338	-	328	272	-	-	-	-
Extensibility, mm	229	189	169	-	201	-	204	176	-	-	-	-
ALVEOGRAM												
Strength (S), cm²	44.5	39.1	31.5	-	36.4	-	36.7	31.3	-	-	-	-
Stability (P), mm	82	94	94	-	83	-	87	90	-	-	-	-
Distensibility (L), mm	132	96	69	-	107	-	98	85	-	-	-	-
Configuration ratio (P/L)	0.62	0.98	1.36	-	0.78	-	0.89	1.06	-	-	-	-
MIXOGRAM												
Peak time, min	2.8	2.7	2.9	-	2.4	-	2.3	2.3	-	-	-	-
100g BAKING TEST												
Loaf volume, cm³	1099	982	869	-	1147	-	1061	946	-	-	-	-
Evaluation (see page 79)	0	0	0	-	0	-	0	0	-	-	-	-

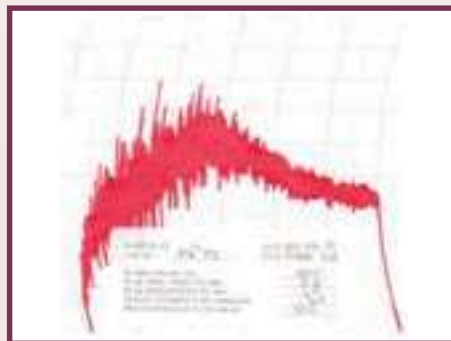
RHEOLOGICAL GRAPHS PER PRODUCTION REGION

MIXOGRAM

35

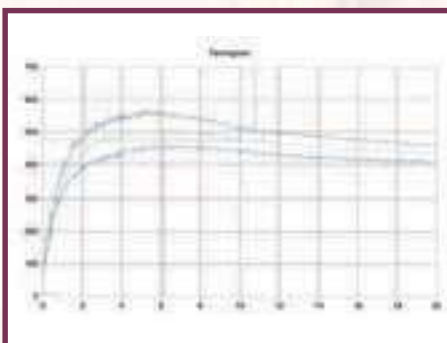


36

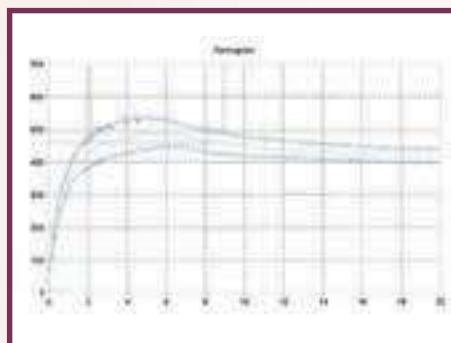


FARINOGRAM

35

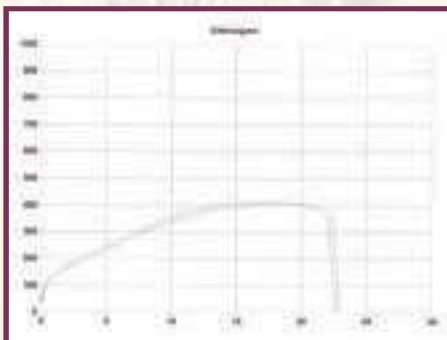


36

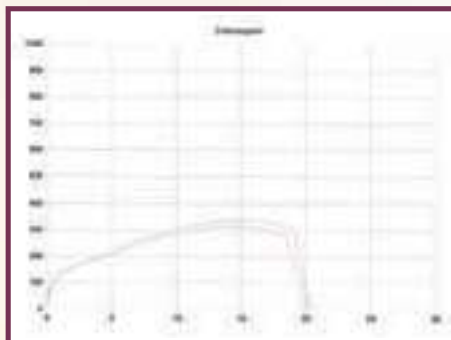


EXTENSOGRAM

35

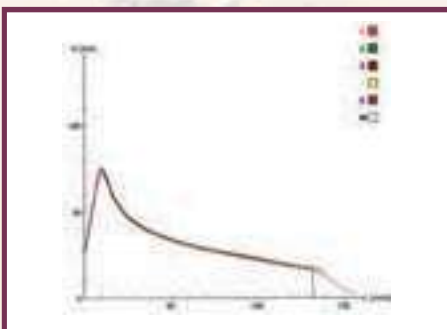


36



ALVEOGRAM

35



36

