

South African quality data per production region

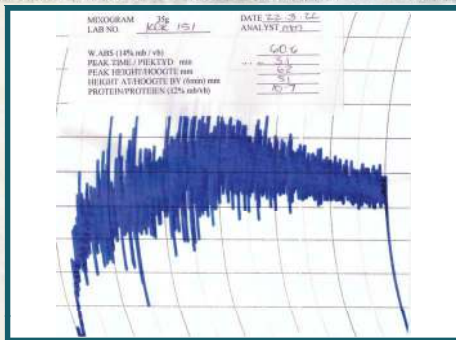
WINTER RAINFALL WHEAT

PRODUCTION REGION	(1)				(2)					
	Namakwaland Region				Swartland Western Region					
WHEAT										
	ave	min	max	stdev	ave	min	max	stdev		
Protein (12% mb), %	12.2	10.8	14.1	1.42	10.6	9.8	11.5	0.77		
Falling number, sec	405	376	419	19.54	366	356	381	11.86		
Moisture, %	10.7	10.7	10.7	0.00	11.4	10.9	11.9	0.50		
1000 Kernel mass (13% mb), g	36.5	35.2	38.8	1.63	37.2	36.3	37.8	0.70		
Hectolitre mass (dirty), kg/hl	79.0	78.2	79.7	0.62	77.1	75.7	77.8	0.99		
Screenings (<1.8 mm sieve), %	3.89	3.34	4.61	0.56	2.16	1.41	3.69	1.04		
Total damaged kernels, %	1.69	1.32	1.88	0.25	0.27	0.00	0.52	0.22		
Combined deviations, %	6.09	5.32	6.71	0.62	3.98	2.87	5.27	1.07		
Number of samples	4				4					
MIXOGRAM (Quadromat Junior)										
	ave	min	max	stdev	ave	min	max	stdev		
Peak time, min	3.1	2.8	3.4	0.26	3.4	3.2	3.6	0.17		
Tail height (6 min), mm	51	49	52	1.41	48	44	51	3.51		
Number of samples	4				4					
CLASS AND GRADE	COMPOSITE SAMPLES									
	Super	B1	B2	B3	COW	Super	B1	B2	B3	COW
Bühler Extraction, %	-	-	-	-	70.1	-	-	-	-	73.6
FLOUR										
Protein (12% mb), %	-	-	-	-	11.2	-	-	-	-	9.7
Moisture, %	-	-	-	-	14.1	-	-	-	-	13.8
Ash (db), %	-	-	-	-	0.62	-	-	-	-	0.58
Colour, KJ (wet)	-	-	-	-	-5.0	-	-	-	-	-5.0
Colour, Konica Minolta CM5 (dry)	-	-	-	-	94.21	-	-	-	-	94.19
L*	-	-	-	-	0.43	-	-	-	-	0.40
a*	-	-	-	-	10.12	-	-	-	-	10.22
b*	-	-	-	-		-	-	-	-	
RVA										
Peak Viscosity, cP	-	-	-	-	2322	-	-	-	-	2511
Minimum viscosity (Trough), cP	-	-	-	-	1639	-	-	-	-	1761
Final Viscosity, cP	-	-	-	-	2624	-	-	-	-	2927
Peak Time, min	-	-	-	-	7.00	-	-	-	-	7.00
GLUTEN										
Wet gluten (14% mb), %	-	-	-	-	29.5	-	-	-	-	25.6
Dry gluten (14% mb), %	-	-	-	-	10.4	-	-	-	-	8.5
Gluten Index	-	-	-	-	98	-	-	-	-	94
FARINOGRAM										
Water absorption (14% mb), %	-	-	-	-	59.9	-	-	-	-	56.7
Development time, min	-	-	-	-	5.3	-	-	-	-	4.4
Stability, min	-	-	-	-	16.3	-	-	-	-	9.6
Mixing tolerance index, BU	-	-	-	-	30	-	-	-	-	30
EXTENSOGRAM (45 min pull)										
Area, cm²	-	-	-	-	114	-	-	-	-	87
Maximum height, BU	-	-	-	-	452	-	-	-	-	392
Extensibility, mm	-	-	-	-	183	-	-	-	-	159
ALVEOGRAM										
Strength (S), cm²	-	-	-	-	48.8	-	-	-	-	36.9
Stability (P), mm	-	-	-	-	96	-	-	-	-	78
Distensibility (L), mm	-	-	-	-	128	-	-	-	-	117
Configuration ratio (P/L)	-	-	-	-	0.75	-	-	-	-	0.67
MIXOGRAM										
Peak time, min	-	-	-	-	2.9	-	-	-	-	2.9
100 g BAKING TEST										
Loaf volume, cm³	-	-	-	-	1024	-	-	-	-	977
Evaluation (see page 78)	-	-	-	-	0	-	-	-	-	0

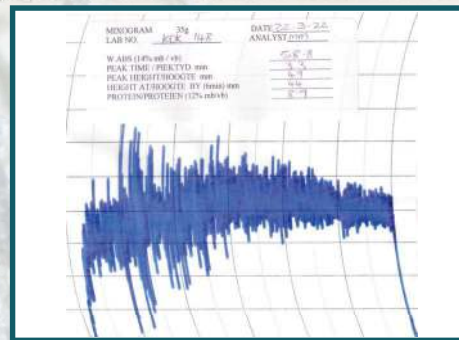
Rheological Graphs Per Production Region

MIXOGRAM

1

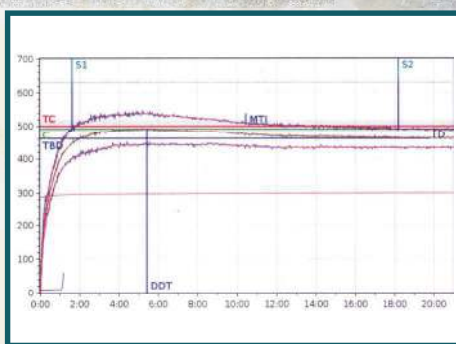


2

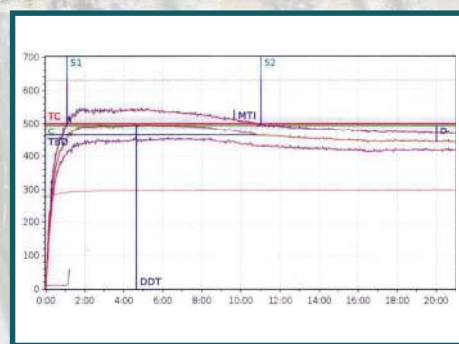


FARINOGRAM

1

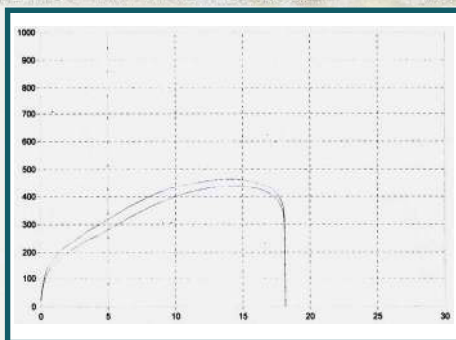


2

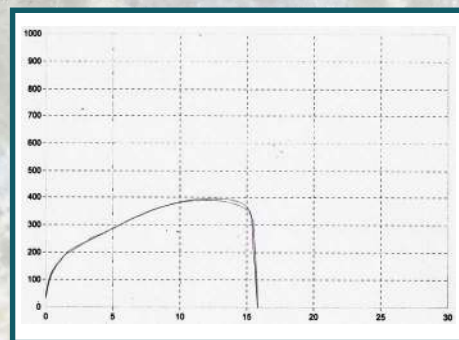


EXTENSOGRAM

1

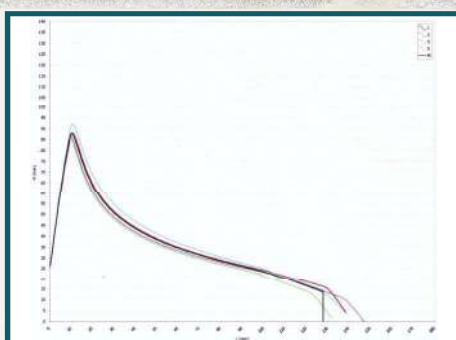


2

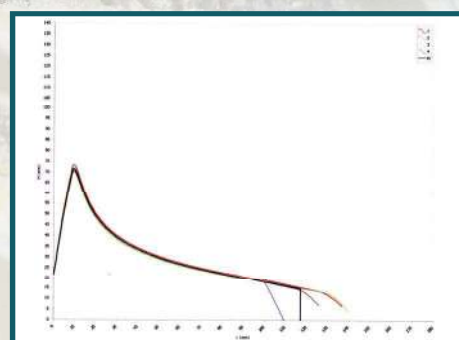


ALVEOGRAM

1



2



South African quality data per production region

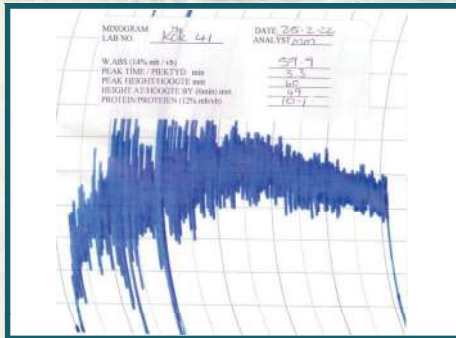
WINTER RAINFALL WHEAT

PRODUCTION REGION	(3)				(4)					
	Swartland Central Region				Swartland Eastern Region					
WHEAT										
	ave	min	max	stdev	ave	min	max	stdev		
Protein (12% mb), %	11.2	9.6	14.0	1.05	10.7	9.0	13.3	1.07		
Falling number, sec	397	333	447	22.91	369	310	405	27.37		
Moisture, %	10.8	9.3	12.1	0.63	10.3	9.0	11.2	0.58		
1000 Kernel mass (13% mb), g	38.3	29.6	42.7	2.43	37.6	32.1	40.2	2.43		
Hectolitre mass (dirty), kg/hl	78.7	73.7	82.0	1.84	78.7	77.2	80.6	1.09		
Screenings (<1.8 mm sieve), %	1.71	0.38	4.15	0.76	1.88	0.18	3.13	0.75		
Total damaged kernels, %	0.34	0.00	1.80	0.39	0.41	0.00	3.24	0.80		
Combined deviations, %	3.35	1.20	7.41	1.44	4.07	1.04	6.19	1.56		
Number of samples	57				15					
MIXOGRAM (Quadromat Junior)										
	ave	min	max	stdev	ave	min	max	stdev		
Peak time, min	3.2	2.6	3.8	0.24	3.0	2.7	3.3	0.15		
Tail height (6 min), mm	49	41	59	3.05	46	40	51	3.48		
Number of samples	57				15					
CLASS AND GRADE	COMPOSITE SAMPLES									
	Super	B1	B2	B3	COW	Super	B1	B2	B3	COW
Bühler Extraction, %	70.8	72.6	72.7	73.1	72.2	-	70.5	72.9	72.7	-
FLOUR										
Protein (12% mb), %	12.3	10.8	10.1	9.1	10.6	-	10.6	10.4	9.1	-
Moisture, %	13.5	14.0	13.8	13.7	13.4	-	13.7	13.1	13.4	-
Ash (db), %	0.62	0.65	0.62	0.65	0.60	-	0.59	0.59	0.62	-
Colour, KJ (wet)	-5.0	-5.0	-5.0	-5.0	-5.0	-	-5.0	-5.0	-5.0	-
Colour, Konica Minolta CM5 (dry)										
L*	94.10	93.90	94.25	94.19	93.81	-	93.60	93.75	94.21	-
a*	0.48	0.64	0.47	0.51	0.48	-	0.45	0.45	0.45	-
b*	9.45	10.18	9.80	9.57	10.00	-	10.83	10.48	9.73	-
RVA										
Peak Viscosity, cP	2291	2336	2545	2420	2411	-	2238	2257	2243	-
Minimum viscosity (Trough), cP	1590	1619	1758	1818	1691	-	1744	1607	1787	-
Final Viscosity, cP	2583	2756	3004	2866	2782	-	2588	2630	2641	-
Peak Time, min	7.00	7.00	7.00	7.00	7.00	-	7.00	7.00	7.00	-
GLUTEN										
Wet gluten (14% mb), %	33.1	27.4	25.9	22.6	27.9	-	26.8	28.6	22.7	-
Dry gluten (14% mb), %	11.5	9.2	9.1	7.9	9.1	-	9.1	9.5	7.8	-
Gluten Index	95	97	98	96	96	-	98	98	97	-
FARINOGRAM										
Water absorption (14% mb), %	63.0	58.6	59.1	57.7	58.3	-	58.6	57.9	57.6	-
Development time, min	6.5	4.5	5.2	3.4	4.0	-	4.5	4.3	3.5	-
Stability, min	20.0	10.2	10.6	6.5	7.5	-	9.4	8.4	7.2	-
Mixing tolerance index, BU	15	33	35	57	48	-	37	40	52	-
EXTENSOGRAM (45 min pull)										
Area, cm²	127	100	88	71	92	-	100	91	76	-
Maximum height, BU	457	412	380	352	378	-	380	361	345	-
Extensibility, mm	203	179	164	147	175	-	192	180	157	-
ALVEOGRAM										
Strength (S), cm²	55.5	41.9	40.1	33.5	40.1	-	39.9	33.6	32.7	-
Stability (P), mm	111	82	90	89	80	-	75	69	80	-
Distensibility (L), mm	111	127	107	88	127	-	134	134	99	-
Configuration ratio (P/L)	1.00	0.65	0.84	1.01	0.63	-	0.56	0.51	0.81	-
MIXOGRAM										
Peak time, min	2.8	3.0	2.9	2.8	2.9	-	2.8	2.7	3.0	-
100 g BAKING TEST										
Loaf volume, cm³	1068	1031	960	933	1030	-	1000	1049	942	-
Evaluation (see page 78)	0	0	0	0	0	-	0	0	0	-

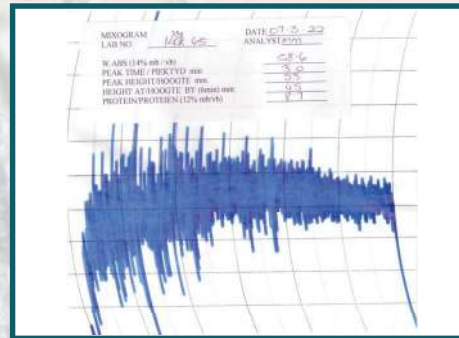
Rheological Graphs Per Production Region

MIXOGRAM

3

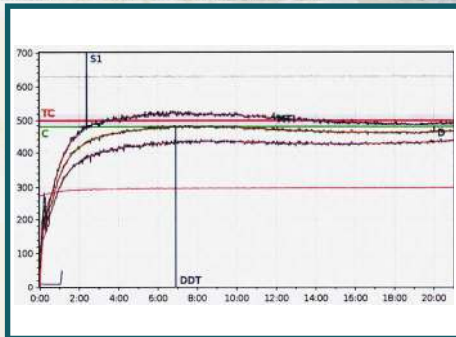


4

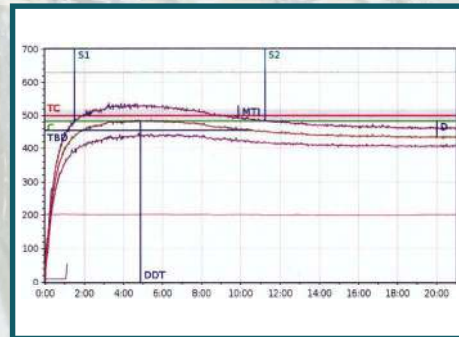


FARINOGRAM

3

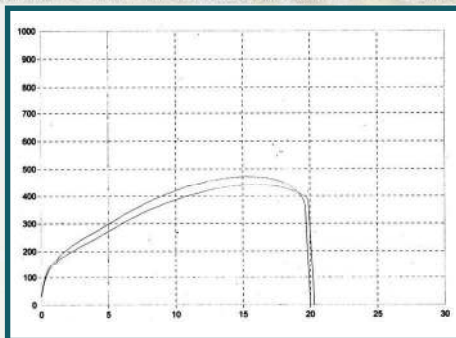


4

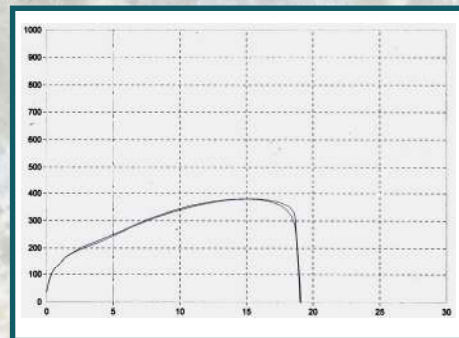


EXTENSOGRAM

3

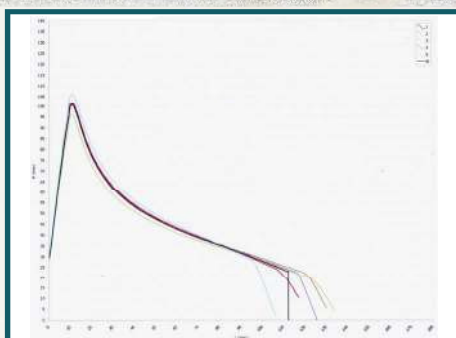


4

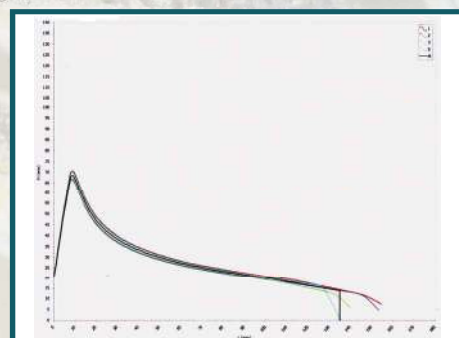


ALVEOGRAM

3



4



South African quality data per production region

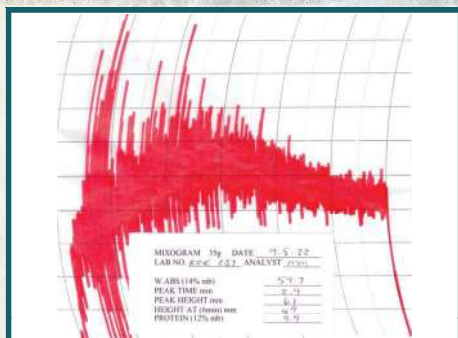
WINTER RAINFALL WHEAT

PRODUCTION REGION	(5)				(6)					
	Rüens Western Region				Rüens Eastern Region					
WHEAT										
	ave	min	max	stdev	ave	min	max	stdev		
Protein (12% mb), %	11.1	9.3	13.3	1.18	10.8	9.6	13.2	0.97		
Falling number, sec	391	345	452	25.51	368	328	425	25.42		
Moisture, %	11.4	11.0	11.9	0.23	11.4	11.0	12.9	0.37		
1000 Kernel mass (13% mb), g	42.7	37.6	47.7	2.46	43.8	34.2	46.2	2.25		
Hectolitre mass (dirty), kg/hl	80.6	77.8	81.9	0.94	79.5	76.5	83.0	1.45		
Screenings (<1.8 mm sieve), %	1.11	0.13	5.70	1.06	0.41	0.01	2.55	0.51		
Total damaged kernels, %	0.36	0.00	1.12	0.28	0.65	0.00	1.40	0.40		
Combined deviations, %	2.05	0.73	6.30	1.08	1.49	0.54	3.41	0.71		
Number of samples	26				26					
MIXOGRAM (Quadromat Junior)										
	ave	min	max	stdev	ave	min	max	stdev		
Peak time, min	2.9	2.5	3.3	0.18	3.0	1.9	3.9	0.41		
Tail height (6 min), mm	49	38	57	4.24	49	39	58	4.38		
Number of samples	26				26					
CLASS AND GRADE	COMPOSITE SAMPLES									
	Super	B1	B2	B3	COW	Super	B1	B2	B3	COW
Bühler Extraction, %	74.3	74.0	74.0	73.7	74.5	73.1	74.1	73.7	74.0	74.7
FLOUR										
Protein (12% mb), %	11.7	11.2	10.0	9.1	10.3	12.0	10.9	9.9	9.3	10.0
Moisture, %	13.5	14.1	13.8	13.7	13.7	13.5	13.3	14.4	13.9	13.8
Ash (db), %	0.64	0.64	0.64	0.66	0.60	0.64	0.63	0.63	0.62	0.60
Colour, KJ (wet)	-5.0	-5.0	-5.0	-5.0	-5.0	-5.0	-5.0	-5.0	-5.0	-5.0
Colour, Konica Minolta CM5 (dry)										
L*	94.13	93.39	94.15	94.15	93.63	93.91	93.98	94.02	94.00	93.76
a*	0.55	0.58	0.46	0.44	0.52	0.50	0.48	0.49	0.45	0.45
b*	9.66	9.84	9.40	9.67	9.61	10.96	9.10	8.92	9.33	8.93
RVA										
Peak Viscosity, cP	2282	2414	2414	2513	2396	2065	2315	2330	2366	2343
Minimum viscosity (Trough), cP	1689	1775	1789	1849	1721	1551	1670	1726	1731	1711
Final Viscosity, cP	2611	2800	2766	2869	2755	2326	2643	2672	2732	2715
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), %	31.3	29.4	26.6	22.6	27.6	32.1	30.0	27.2	24.3	27.1
Dry gluten (14% mb), %	10.9	10.0	9.0	7.5	9.2	10.5	9.9	8.9	8.0	8.9
Gluten Index	97	97	96	97	96	95	94	94	96	97
FARINOGRAM										
Water absorption (14% mb), %	61.1	60.5	59.6	58.7	59.9	60.1	62.1	60.6	59.4	60.8
Development time, min	6.0	4.3	3.6	4.0	3.5	4.1	4.4	4.0	3.1	3.5
Stability, min	12.4	8.4	7.4	7.2	6.6	10.4	9.4	9.2	8.0	7.4
Mixing tolerance index, BU	32	43	48	49	55	32	39	36	42	48
EXTENSOGRAM (45 min pull)										
Area, cm²	115	104	72	66	79	110	92	79	73	78
Maximum height, BU	388	374	309	312	316	374	356	317	323	329
Extensibility, mm	216	196	164	149	179	209	183	178	163	166
ALVEOGRAM										
Strength (S), cm²	41.0	40.2	36.4	32.1	35.9	39.8	41.7	38.4	34.1	38.8
Stability (P), mm	82	81	86	84	85	74	97	96	92	98
Distensibility (L), mm	119	126	107	95	107	152	106	99	87	97
Configuration ratio (P/L)	0.69	0.64	0.80	0.88	0.79	0.49	0.92	0.97	1.06	1.01
MIXOGRAM										
Peak time, min	2.6	2.4	2.4	2.8	2.6	2.3	2.4	2.6	2.7	2.6
100 g BAKING TEST										
Loaf volume, cm³	1091	980	977	941	1029	1109	1019	976	974	981
Evaluation (see page 78)	0	0	0	0	0	0	0	0	0	0

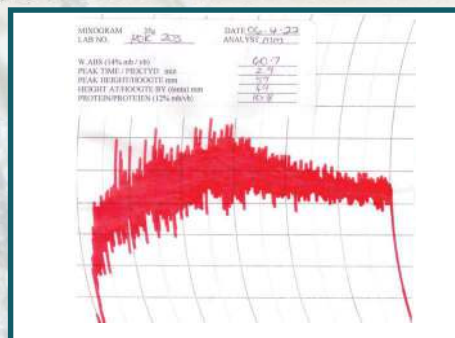
Rheological Graphs Per Production Region

MIXOGRAM

5

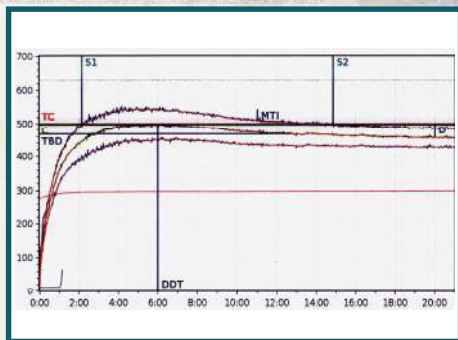


6

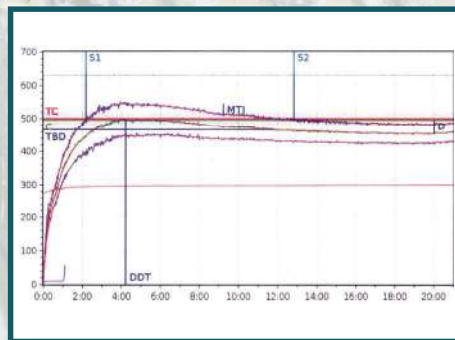


FARINOGRAM

5

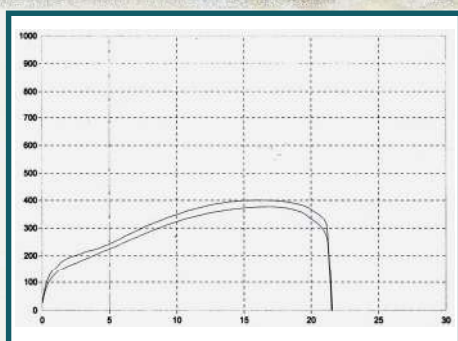


6

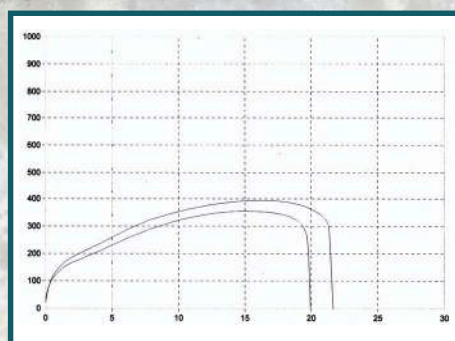


EXTENSOGRAM

5

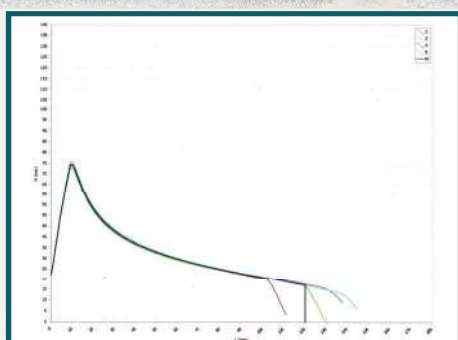


6

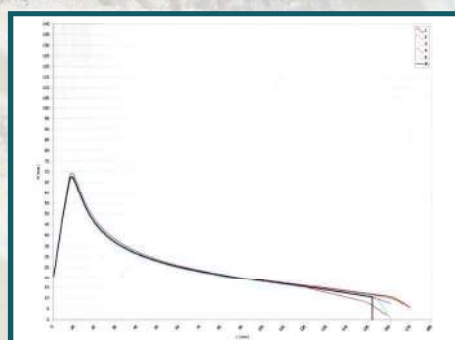


ALVEOGRAM

5



6



South African quality data per production region

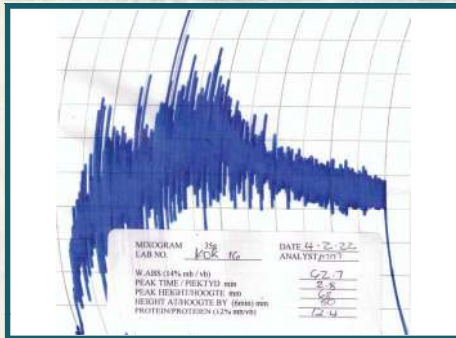
IRRIGATION WHEAT

PRODUCTION REGION	(10) Griqualand West Region				(11) Vaalharts Region					
WHEAT										
	ave	min	max	stdev	ave	min	max	stdev		
Protein (12% mb), %	12.6	11.0	13.6	0.75	12.1	10.8	13.6	0.79		
Falling number, sec	357	312	454	30.80	335	279	384	35.05		
Moisture, %	11.0	9.3	12.2	0.66	10.9	9.9	12.1	0.68		
1000 Kernel mass (13% mb), g	43.0	37.7	47.4	2.45	43.3	39.3	46.1	2.06		
Hectolitre mass (dirty), kg/hl	82.4	79.6	85.5	1.63	80.4	77.6	84.0	1.34		
Screenings (<1.8 mm sieve), %	0.38	0.01	1.81	0.40	0.72	0.07	2.23	0.63		
Total damaged kernels, %	0.18	0.00	1.00	0.21	0.28	0.00	0.74	0.28		
Combined deviations, %	0.88	0.02	2.19	0.50	1.53	0.26	4.54	1.24		
Number of samples	39				16					
MIXOGRAM (Quadromat Junior)										
	ave	min	max	stdev	ave	min	max	stdev		
Peak time, min	2.8	1.9	3.5	0.32	2.9	2.4	3.7	0.30		
Tail height (6 min), mm	50	44	57	2.55	48	42	51	2.28		
Number of samples	39				16					
CLASS AND GRADE	COMPOSITE SAMPLES									
	Super	B1	B2	B3	COW	Super	B1	B2	B3	COW
Bühler Extraction, %	74.9	75.2	74.5	-	-	75.6	76.3	73.6	-	-
FLOUR										
Protein (12% mb), %	12.2	11.4	10.1	-	-	12.3	11.1	10.3	-	-
Moisture, %	14.1	13.5	14.1	-	-	13.9	13.8	13.5	-	-
Ash (db), %	0.58	0.59	0.61	-	-	0.55	0.58	0.57	-	-
Colour, KJ (wet)	-5.0	-5.0	-5.0	-	-	-5.0	-5.0	-5.0	-	-
Colour, Konica Minolta CM5 (dry)										
L*	93.88	93.90	93.85	-	-	93.37	93.71	93.83	-	-
a*	0.57	0.57	0.52	-	-	0.55	0.50	0.43	-	-
b*	10.36	10.24	10.11	-	-	10.80	10.39	9.91	-	-
RVA										
Peak Viscosity, cP	2047	2106	2147	-	-	1782	2007	1985	-	-
Minimum viscosity (Trough), cP	1580	1637	1653	-	-	1564	1624	1601	-	-
Final Viscosity, cP	2240	2329	2412	-	-	1937	2194	2188	-	-
Peak Time, min	7.00	7.00	7.00	-	-	6.87	7.00	7.00	-	-
GLUTEN										
Wet gluten (14% mb), %	32.6	31.0	28.0	-	-	34.3	30.8	27.5	-	-
Dry gluten (14% mb), %	11.1	10.3	9.1	-	-	11.3	10.2	8.9	-	-
Gluten Index	94	95	94	-	-	93	93	95	-	-
FARINOGRAM										
Water absorption (14% mb), %	61.7	61.0	59.1	-	-	62.4	61.0	59.3	-	-
Development time, min	6.3	5.3	4.4	-	-	5.1	5.3	4.5	-	-
Stability, min	10.1	8.0	6.5	-	-	8.1	8.0	6.2	-	-
Mixing tolerance index, BU	39	46	58	-	-	45	44	69	-	-
EXTENSOGRAM (45 min pull)										
Area, cm²	113	97	82	-	-	113	93	84	-	-
Maximum height, BU	362	336	335	-	-	335	333	324	-	-
Extensibility, mm	230	209	179	-	-	246	207	188	-	-
ALVEOGRAM										
Strength (S), cm²	44.5	40.2	35.8	-	-	41.1	35.2	34.7	-	-
Stability (P), mm	76	76	75	-	-	72	70	67	-	-
Distensibility (L), mm	146	138	127	-	-	157	124	138	-	-
Configuration ratio (P/L)	0.52	0.55	0.59	-	-	0.46	0.56	0.49	-	-
MIXOGRAM										
Peak time, min	2.8	2.7	2.8	-	-	2.5	2.6	2.7	-	-
100 g BAKING TEST										
Loaf volume, cm³	1160	1076	1171	-	-	1176	1135	1086	-	-
Evaluation (see page 78)	0	0	0	-	-	0	0	0	-	-

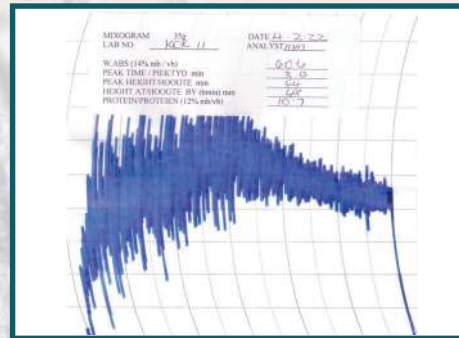
Rheological Graphs Per Production Region

MIXOGRAM

10

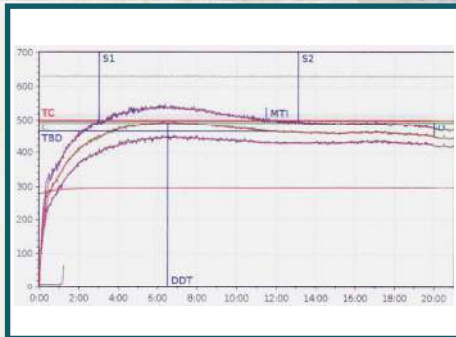


11

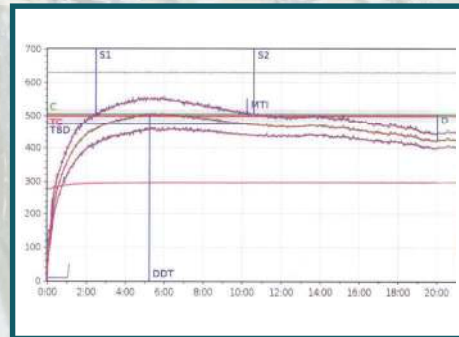


FARINOGRAM

10

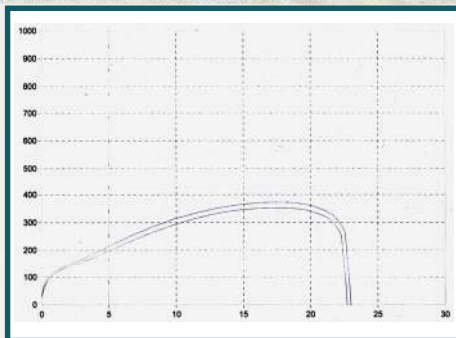


11

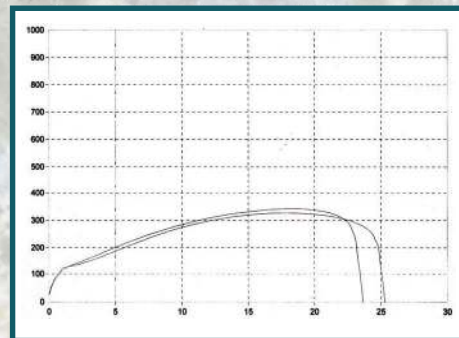


EXTENSOGRAM

10

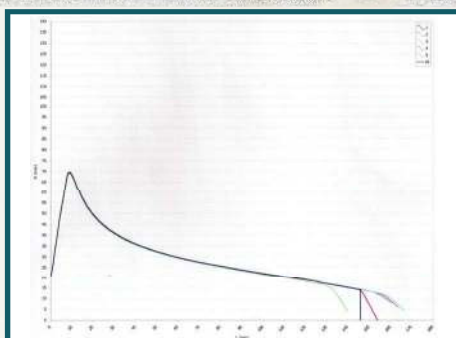


11

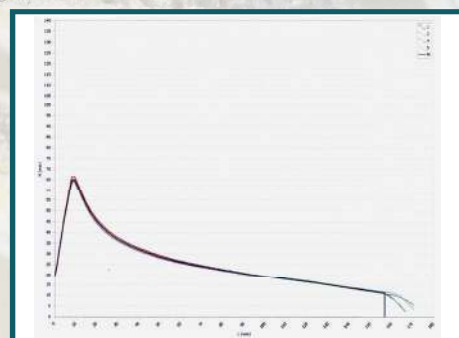


ALVEOGRAM

10



11



South African quality data per production region

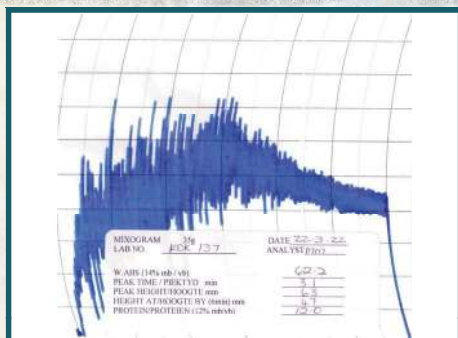
IRRIGATION WHEAT

PRODUCTION REGION	(12) North West Western Region				(14) North West Southern Region					
	ave	min	max	stdev	ave	min	max	stdev		
WHEAT										
Protein (12% mb), %	11.3	-	-	-	14.1	13.4	14.7	0.54		
Falling number, sec	293	-	-	-	348	281	411	50.83		
Moisture, %	12.7	-	-	-	11.6	10.9	12.6	0.69		
1000 Kernel mass (13% mb), g	43.3	-	-	-	36.8	34.4	42.8	3.22		
Hectolitre mass (dirty), kg/hl	80.7	-	-	-	81.4	75.4	83.7	3.37		
Screenings (<1.8 mm sieve), %	1.21	-	-	-	0.13	0.07	0.22	0.06		
Total damaged kernels, %	1.30	-	-	-	0.24	0.00	0.86	0.31		
Combined deviations, %	2.79	-	-	-	0.61	0.23	1.08	0.32		
Number of samples	1				6					
MIXOGRAM (Quadromat Junior)										
Peak time, min	3.1	-	-	-	3.7	3.0	3.9	0.36		
Tail height (6 min), mm	47	-	-	-	55	52	57	1.79		
Number of samples	1				6					
COMPOSITE SAMPLES										
CLASS AND GRADE	Super	B1	B2	B3	COW	Super	B1	B2	B3	COW
Bühler Extraction, %	-	-	-	-	-	71.3	-	-	-	-
FLOUR										
Protein (12% mb), %	-	-	-	-	-	14.0	-	-	-	-
Moisture, %	-	-	-	-	-	13.9	-	-	-	-
Ash (db), %	-	-	-	-	-	0.57	-	-	-	-
Colour, KJ (wet)	-	-	-	-	-	-5.0	-	-	-	-
Colour, Konica Minolta CM5 (dry)										
L*	-	-	-	-	-	94.12	-	-	-	-
a*	-	-	-	-	-	0.50	-	-	-	-
b*	-	-	-	-	-	8.86	-	-	-	-
RVA										
Peak Viscosity, cP	-	-	-	-	-	2359	-	-	-	-
Minimum viscosity (Trough), cP	-	-	-	-	-	1689	-	-	-	-
Final Viscosity, cP	-	-	-	-	-	2660	-	-	-	-
Peak Time, min	-	-	-	-	-	7.00	-	-	-	-
GLUTEN										
Wet gluten (14% mb), %	-	-	-	-	-	33.7	-	-	-	-
Dry gluten (14% mb), %	-	-	-	-	-	11.7	-	-	-	-
Gluten Index	-	-	-	-	-	97	-	-	-	-
FARINOGRAM										
Water absorption (14% mb), %	-	-	-	-	-	62.8	-	-	-	-
Development time, min	-	-	-	-	-	21.0	-	-	-	-
Stability, min	-	-	-	-	-	5.5	-	-	-	-
Mixing tolerance index, BU	-	-	-	-	-	0	-	-	-	-
EXTENSOGRAM (45 min pull)										
Area, cm²	-	-	-	-	-	154	-	-	-	-
Maximum height, BU	-	-	-	-	-	509	-	-	-	-
Extensibility, mm	-	-	-	-	-	232	-	-	-	-
ALVEOGRAM										
Strength (S), cm²	-	-	-	-	-	78.4	-	-	-	-
Stability (P), mm	-	-	-	-	-	110	-	-	-	-
Distensibility (L), mm	-	-	-	-	-	138	-	-	-	-
Configuration ratio (P/L)	-	-	-	-	-	0.80	-	-	-	-
MIXOGRAM										
Peak time, min	-	-	-	-	-	3.4	-	-	-	-
100 g BAKING TEST										
Loaf volume, cm³	-	-	-	-	-	1260	-	-	-	-
Evaluation (see page 78)	-	-	-	-	-	0	-	-	-	-

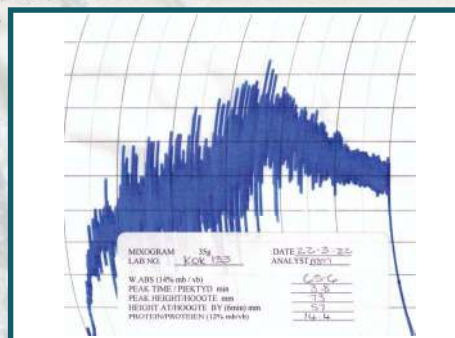
Rheological Graphs Per Production Region

MIXOGRAM

12

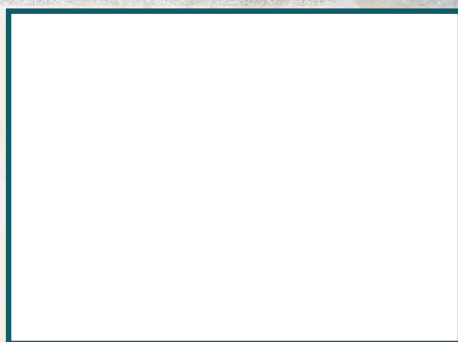


14

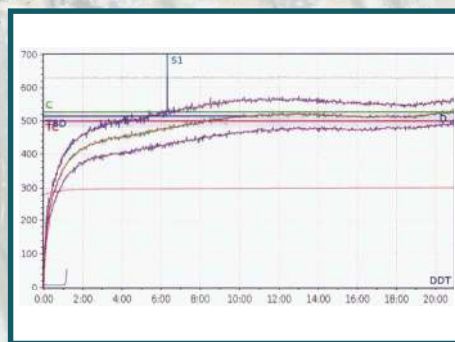


FARINOGRAM

12

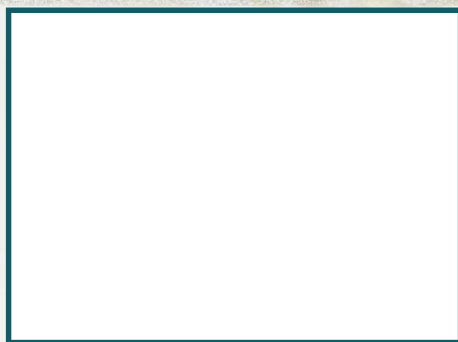


14

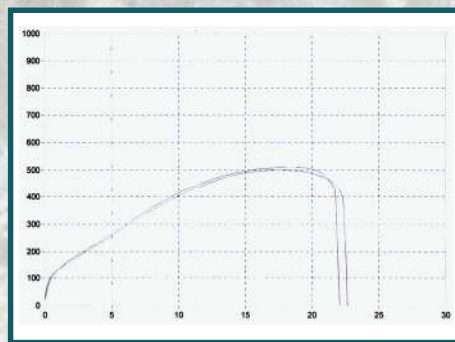


EXTENSOGRAM

12

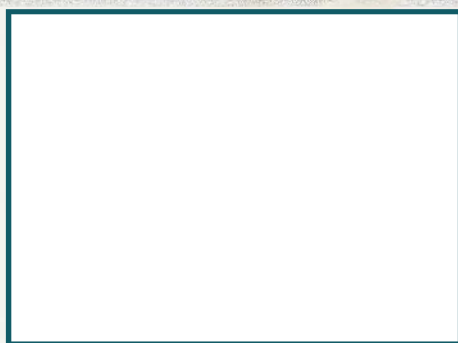


14

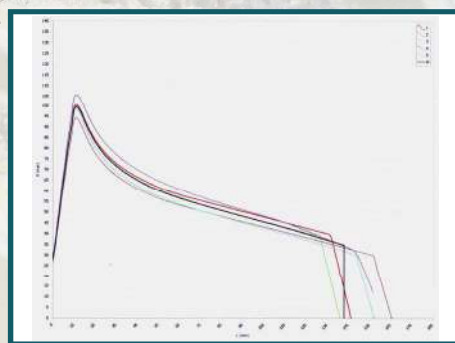


ALVEOGRAM

12



14



South African quality data per production region

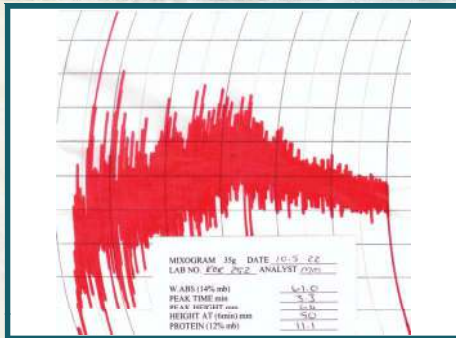
IRRIGATION WHEAT

PRODUCTION REGION	(15) North West Southern Region				(17) North West Central Northern Region (Ottosdal)					
	ave	min	max	stdev	ave	min	max	stdev		
WHEAT										
Protein (12% mb), %	11.8	10.8	13.0	0.95	13.5	12.7	14.3	1.13		
Falling number, sec	337	327	352	12.25	360	326	394	48.08		
Moisture, %	11.1	10.6	11.3	0.32	12.5	12.4	12.5	0.07		
1000 Kernel mass (13% mb), g	44.2	42.6	45.8	1.79	36.1	35.9	36.2	0.21		
Hectolitre mass (dirty), kg/hl	79.6	78.1	80.2	0.99	78.7	78.0	79.4	0.99		
Screenings (<1.8 mm sieve), %	0.33	0.29	0.36	0.03	0.72	0.46	0.98	0.37		
Total damaged kernels, %	0.16	0.06	0.36	0.14	0.54	0.12	0.96	0.59		
Combined deviations, %	0.58	0.43	0.76	0.16	2.08	1.40	2.76	0.96		
Number of samples	4				2					
MIXOGRAM (Quadromat Junior)										
Peak time, min	3.2	3.0	3.6	0.29	2.9	2.8	2.9	0.07		
Tail height (6 min), mm	48	46	50	1.83	51	46	55	6.36		
Number of samples	4				2					
COMPOSITE SAMPLES										
CLASS AND GRADE	Super	B1	B2	B3	COW	Super	B1	B2	B3	COW
Bühler Extraction, %	77.6	-	75.9	-	-	72.7	-	-	-	-
FLOUR										
Protein (12% mb), %	12.1	-	10.1	-	-	13.3	-	-	-	-
Moisture, %	13.6	-	13.3	-	-	14.3	-	-	-	-
Ash (db), %	0.61	-	0.56	-	-	0.64	-	-	-	-
Colour, KJ (wet)	-5.0	-	-5.0	-	-	-5.0	-	-	-	-
Colour, Konica Minolta CM5 (dry)										
L*	93.63	-	93.99	-	-	93.48	-	-	-	-
a*	0.52	-	0.38	-	-	0.55	-	-	-	-
b*	8.87	-	10.19	-	-	9.95	-	-	-	-
RVA										
Peak Viscosity, cP	2068	-	2077	-	-	2188	-	-	-	-
Minimum viscosity (Trough), cP	1600	-	1634	-	-	1607	-	-	-	-
Final Viscosity, cP	2212	-	2304	-	-	2412	-	-	-	-
Peak Time, min	7.00	-	7.00	-	-	7.00	-	-	-	-
GLUTEN										
Wet gluten (14% mb), %	33.4	-	26.8	-	-	35.6	-	-	-	-
Dry gluten (14% mb), %	10.9	-	8.8	-	-	11.9	-	-	-	-
Gluten Index	96	-	95	-	-	96	-	-	-	-
FARINOGRAM										
Water absorption (14% mb), %	61.5	-	59.3	-	-	62.3	-	-	-	-
Development time, min	6.1	-	3.4	-	-	7.1	-	-	-	-
Stability, min	9.2	-	8.0	-	-	16.3	-	-	-	-
Mixing tolerance index, BU	45	-	45	-	-	28	-	-	-	-
EXTENSOGRAM (45 min pull)										
Area, cm²	122	-	91	-	-	139	-	-	-	-
Maximum height, BU	399	-	366	-	-	445	-	-	-	-
Extensibility, mm	229	-	183	-	-	231	-	-	-	-
ALVEOGRAM										
Strength (S), cm²	48.6	-	38.5	-	-	55.5	-	-	-	-
Stability (P), mm	83	-	73	-	-	89	-	-	-	-
Distensibility (L), mm	140	-	132	-	-	144	-	-	-	-
Configuration ratio (P/L)	0.59	-	0.55	-	-	0.62	-	-	-	-
MIXOGRAM										
Peak time, min	2.9	-	2.9	-	-	2.8	-	-	-	-
100 g BAKING TEST										
Loaf volume, cm³	1141	-	1268	-	-	1213	-	-	-	-
Evaluation (see page 78)	0	-	0	-	-	0	-	-	-	-

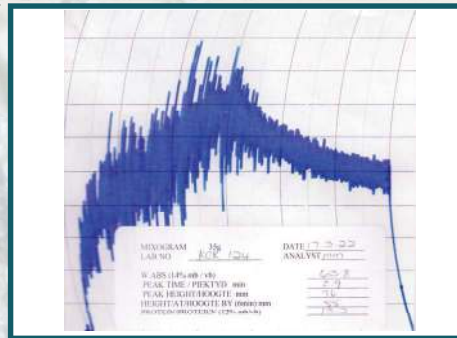
Rheological Graphs Per Production Region

MIXOGRAM

15

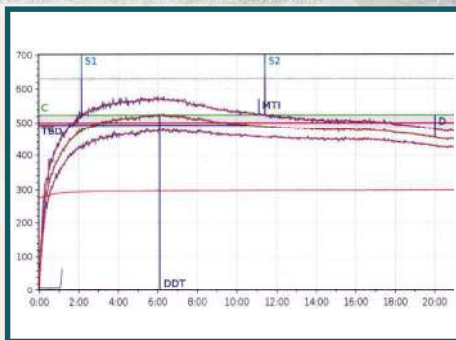


17

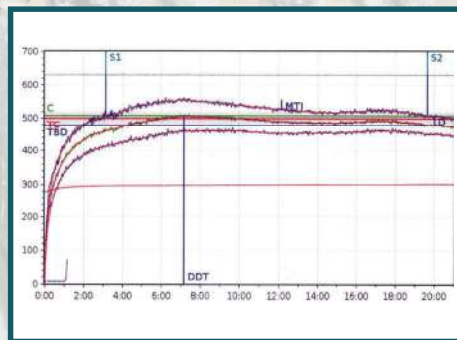


FARINOGRAM

15

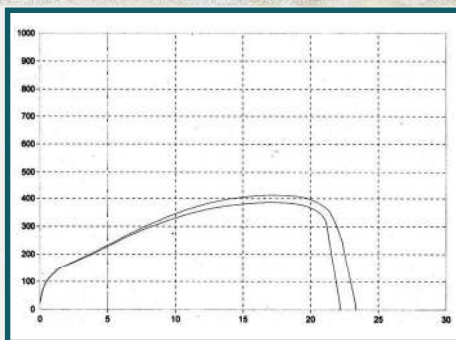


17

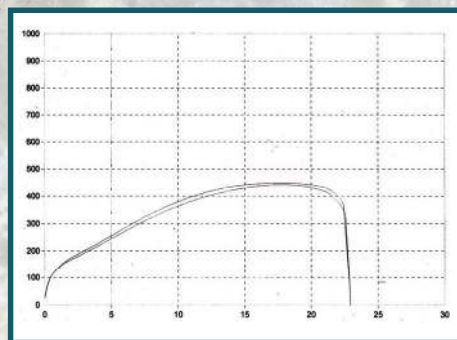


EXTENSOGRAM

15

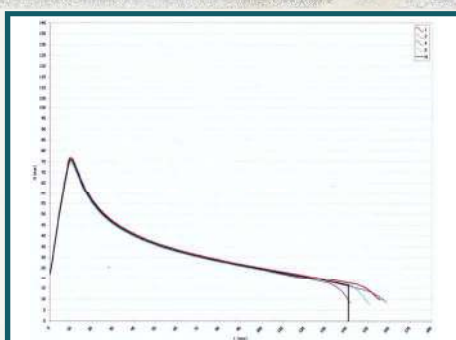


17

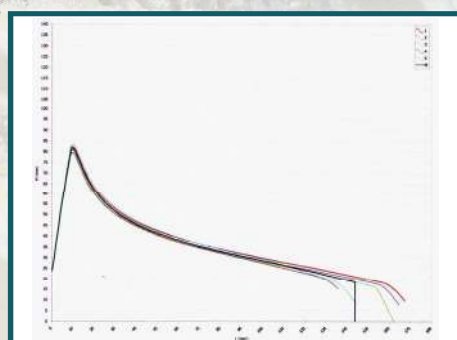


ALVEOGRAM

15



17



South African quality data per production region

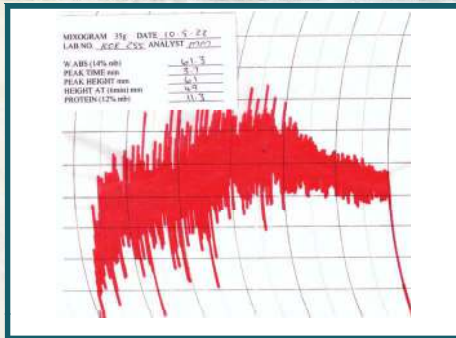
IRRIGATION WHEAT

PRODUCTION REGION	(18) North West Central Region (Ventersdorp)				(19) North West Central Region (Lichtenburg)					
	ave	min	max	stdev	ave	min	max	stdev		
WHEAT										
Protein (12% mb), %	11.8	11.3	12.3	0.71	13.3	12.5	14.5	0.68		
Falling number, sec	299	295	303	5.66	340	185	474	90.84		
Moisture, %	10.8	10.7	10.9	0.14	12.1	10.4	13.5	0.91		
1000 Kernel mass (13% mb), g	38.7	36.4	40.9	3.18	39.0	31.5	40.8	2.75		
Hectolitre mass (dirty), kg/hl	79.6	79.3	79.9	0.42	80.4	74.0	82.7	2.51		
Screenings (<1.8 mm sieve), %	1.44	1.07	1.80	0.52	0.62	0.35	1.61	0.37		
Total damaged kernels, %	0.32	0.14	0.50	0.25	0.52	0.00	1.54	0.49		
Combined deviations, %	2.22	2.04	2.39	0.25	1.50	0.51	4.51	1.14		
Number of samples	2				10					
MIXOGRAM (Quadromat Junior)										
Peak time, min	3.3	2.9	3.7	0.57	4.2	2.6	5.3	0.96		
Tail height (6 min), mm	47	44	49	3.54	56	47	64	5.41		
Number of samples	2				10					
COMPOSITE SAMPLES										
CLASS AND GRADE	Super	B1	B2	B3	COW	Super	B1	B2	B3	COW
Bühler Extraction, %	-	-	75.2	-	-	74.7	-	-	-	73.7
FLOUR										
Protein (12% mb), %	-	-	10.6	-	-	12.5	-	-	-	12.7
Moisture, %	-	-	13.8	-	-	13.7	-	-	-	13.8
Ash (db), %	-	-	0.61	-	-	0.61	-	-	-	0.66
Colour, KJ (wet)	-	-	-5.0	-	-	-5.0	-	-	-	-4.5
Colour, Konica Minolta CM5 (dry) L*	-	-	93.67	-	-	93.70	-	-	-	93.06
a*	-	-	0.45	-	-	0.53	-	-	-	0.53
b*	-	-	8.91	-	-	9.42	-	-	-	9.51
RVA										
Peak Viscosity, cP	-	-	1787	-	-	2020	-	-	-	1493
Minimum viscosity (Trough), cP	-	-	1584	-	-	1594	-	-	-	1233
Final Viscosity, cP	-	-	1939	-	-	2139	-	-	-	1596
Peak Time, min	-	-	6.73	-	-	7.00	-	-	-	6.33
GLUTEN										
Wet gluten (14% mb), %	-	-	29.4	-	-	30.7	-	-	-	32.6
Dry gluten (14% mb), %	-	-	9.8	-	-	10.5	-	-	-	10.9
Gluten Index	-	-	94	-	-	97	-	-	-	97
FARINOGRAM										
Water absorption (14% mb), %	-	-	59.2	-	-	61.2	-	-	-	59.7
Development time, min	-	-	4.5	-	-	10.3	-	-	-	8.6
Stability, min	-	-	6.1	-	-	17.4	-	-	-	16.4
Mixing tolerance index, BU	-	-	60	-	-	29	-	-	-	27
EXTENSOGRAM (45 min pull)										
Area, cm²	-	-	86	-	-	162	-	-	-	169
Maximum height, BU	-	-	315	-	-	528	-	-	-	592
Extensibility, mm	-	-	201	-	-	227	-	-	-	217
ALVEOGRAM										
Strength (S), cm²	-	-	31.5	-	-	64.2	-	-	-	59.0
Stability (P), mm	-	-	67	-	-	102	-	-	-	88
Distensibility (L), mm	-	-	119	-	-	126	-	-	-	148
Configuration ratio (P/L)	-	-	0.56	-	-	0.81	-	-	-	0.59
MIXOGRAM										
Peak time, min	-	-	2.7	-	-	4.0	-	-	-	3.6
100 g BAKING TEST										
Loaf volume, cm³	-	-	1054	-	-	1155	-	-	-	1250
Evaluation (see page 78)	-	-	0	-	-	0	-	-	-	0

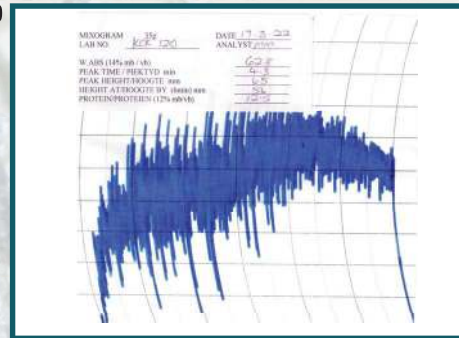
Rheological Graphs Per Production Region

MIXOGRAM

18



19

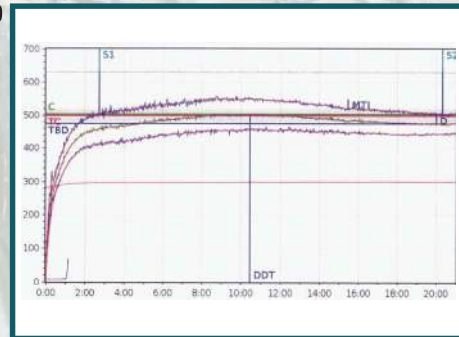


FARINOGRAM

18

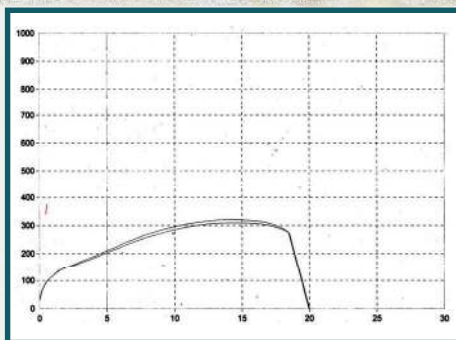


19

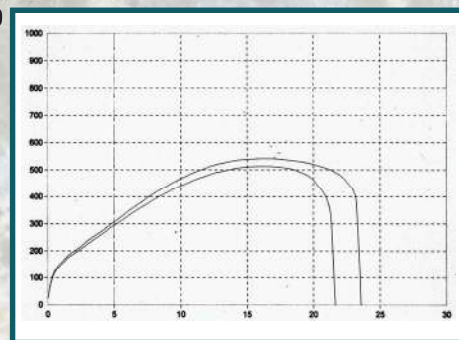


EXTENSOGRAM

18

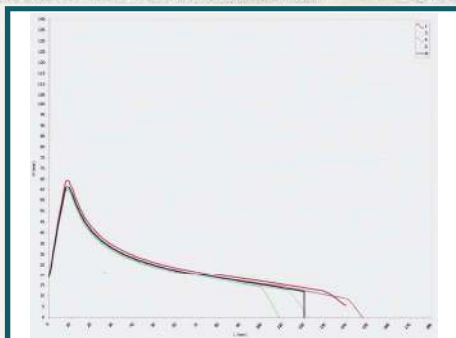


19

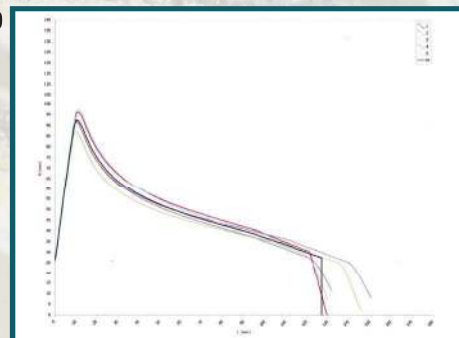


ALVEOGRAM

18



19



South African quality data per production region

IRRIGATION WHEAT

SUMMER RAINFALL AND IRRIGATION

PRODUCTION REGION	(20) North West Eastern Region				(21) Free State North-Western Region (Viljoenskroon)					
WHEAT										
	ave	min	max	stdev	ave	min	max	stdev		
Protein (12% mb), %	12.0	10.4	13.1	0.88	13.7	12.5	14.6	1.08		
Falling number, sec	311	56	467	149.11	360	257	495	122.05		
Moisture, %	11.2	10.0	13.0	1.10	11.3	11.0	11.7	0.38		
1000 Kernel mass (13% mb), g	40.1	35.1	45.9	3.36	34.0	27.6	42.6	7.72		
Hectolitre mass (dirty), kg/hl	80.2	76.8	82.8	1.87	67.0	57.9	78.8	10.70		
Screenings (<1.8 mm sieve), %	1.08	0.20	2.77	0.68	11.15	0.46	23.97	11.90		
Total damaged kernels, %	1.77	0.00	8.24	2.39	2.34	0.34	4.32	1.99		
Combined deviations, %	3.20	0.71	8.44	2.24	17.27	0.90	28.47	14.49		
Number of samples	11				3					
MIXOGRAM (Quadromat Junior)										
	ave	min	max	stdev	ave	min	max	stdev		
Peak time, min	3.5	3.0	4.0	0.30	3.0	2.6	3.3	0.36		
Tail height (6 min), mm	48	43	51	2.47	45	42	46	2.31		
Number of samples	11				3					
CLASS AND GRADE	COMPOSITE SAMPLES									
	Super	B1	B2	B3	COW	Super	B1	B2	B3	COW
Bühler Extraction, %	77.5	75.7	76.3	-	-	-	-	-	-	73.9
FLOUR										
Protein (12% mb), %	12.0	10.9	9.8	-	-	-	-	-	-	12.7
Moisture, %	13.8	13.3	13.4	-	-	-	-	-	-	14.0
Ash (db), %	0.50	0.61	0.60	-	-	-	-	-	-	0.60
Colour, KJ (wet)	-5.0	-5.0	-5.0	-	-	-	-	-	-	-4.3
Colour, Konica Minolta CM5 (dry)										
L*	93.21	93.59	93.59	-	-	-	-	-	-	92.66
a*	0.59	0.51	0.44	-	-	-	-	-	-	0.59
b*	10.37	9.99	9.68	-	-	-	-	-	-	10.94
RVA										
Peak Viscosity, cP	1648	2288	2573	-	-	-	-	-	-	1563
Minimum viscosity (Trough), cP	1405	1851	2007	-	-	-	-	-	-	1305
Final Viscosity, cP	1781	2458	2727	-	-	-	-	-	-	1726
Peak Time, min	6.53	7.00	7.00	-	-	-	-	-	-	6.47
GLUTEN										
Wet gluten (14% mb), %	31.4	29.1	25.7	-	-	-	-	-	-	34.7
Dry gluten (14% mb), %	10.8	9.6	8.3	-	-	-	-	-	-	11.4
Gluten Index	97	95	96	-	-	-	-	-	-	89
FARINOGRAM										
Water absorption (14% mb), %	59.7	59.4	55.7	-	-	-	-	-	-	60.5
Development time, min	9.5	6.6	5.2	-	-	-	-	-	-	5.1
Stability, min	14.2	8.6	8.3	-	-	-	-	-	-	7.5
Mixing tolerance index, BU	41	50	53	-	-	-	-	-	-	51
EXTENSOGRAM (45 min pull)										
Area, cm²	149	118	97	-	-	-	-	-	-	113
Maximum height, BU	505	464	454	-	-	-	-	-	-	389
Extensibility, mm	225	187	157	-	-	-	-	-	-	214
ALVEOGRAM										
Strength (S), cm²	57.3	41.7	33.3	-	-	-	-	-	-	39.8
Stability (P), mm	81	78	75	-	-	-	-	-	-	70
Distensibility (L), mm	159	126	103	-	-	-	-	-	-	155
Configuration ratio (P/L)	0.51	0.62	0.73	-	-	-	-	-	-	0.45
MIXOGRAM										
Peak time, min	3.0	2.9	3.4	-	-	-	-	-	-	2.7
100 g BAKING TEST										
Loaf volume, cm³	1222	1111	1006	-	-	-	-	-	-	1154
Evaluation (see page 78)	0	0	0	-	-	-	-	-	-	0

MIXOGRAM

MICROGRAM ¹⁷⁵
 LAB NO. 168K 116
 DATE 17-3-22
 ANALYST ELZED
 W.ABS (14% w/v) 6.0
 PEAK TIME (PEAK) 3.7
 PEAK HEIGHT (HEIGHT) 3.7
 HEIGHT AT PEAK (HT) (mm) 2.4
 PROTEIN/PROTEIN (12% w/v) (1.0)

MIXOGRAM No. _____ DATE 10-5-72
 LAB NO. 868-258 ANALYST gjm
 W.ARS. (14% w/v) 61.3
 PEAK TIME min 8.1
 PEAK HEIGHT mm 5.8
 HEIGHT AT (50mm) mm 4.2
 PROTEIN (12% w/v) 11.5

The graph shows a function $f(x) = 500 - 0.05x^3$ plotted against x for the interval $0 \leq x \leq 25$. The x-axis ranges from 0 to 30 with major grid lines every 5 units. The y-axis ranges from 0 to 1000 with major grid lines every 100 units. The curve starts at the origin (0,0), increases to a maximum value of approximately 500 at $x \approx 20$, and then decreases sharply to zero at $x = 25$.

The graph shows the function $f(x) = 1000 - 100x^2 + 10x^3$ for $x \in [0, 20]$. The x-axis is labeled from 0 to 30 in increments of 5. The y-axis is labeled from 0 to 1000 in increments of 100. The curve starts at the origin (0,0), increases to a peak of about 400 at $x=15$, and then decreases to 0 at $x=20$. The area under the curve is shaded in light blue.

South African quality data per production region

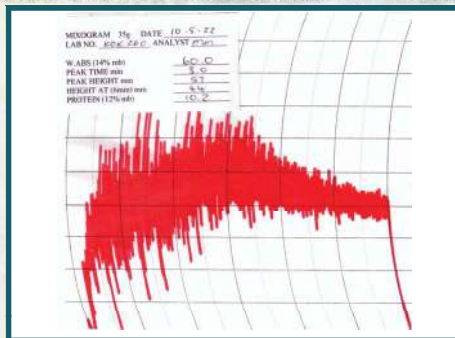
SUMMER RAINFALL AND IRRIGATION WHEAT

PRODUCTION REGION	(22) Free State North-Western Region (Bothaville)				(23) Free State North-Western Region (Bultfontein)					
	ave	min	max	stdev	ave	min	max	stdev		
WHEAT										
Protein (12% mb), %	11.9	-	-	-	12.0	10.2	14.5	1.15		
Falling number, sec	251	-	-	-	288	125	378	72.90		
Moisture, %	11.5	-	-	-	11.4	10.7	12.0	0.35		
1000 Kernel mass (13% mb), g	47.0	-	-	-	40.8	35.5	45.5	2.68		
Hectolitre mass (dirty), kg/hl	78.1	-	-	-	77.9	75.5	81.9	1.85		
Screenings (<1.8 mm sieve), %	0.24	-	-	-	1.11	0.33	2.82	0.66		
Total damaged kernels, %	0.12	-	-	-	0.55	0.00	2.12	0.70		
Combined deviations, %	0.36	-	-	-	1.90	0.53	3.56	1.01		
Number of samples	1				17					
MIXOGRAM (Quadromat Junior)										
Peak time, min	3.0	-	-	-	3.3	2.4	4.0	0.37		
Tail height (6 min), mm	44	-	-	-	52	45	58	3.49		
Number of samples	1				17					
CLASS AND GRADE	COMPOSITE SAMPLES									
	Super	B1	B2	B3	COW	Super	B1	B2	B3	COW
Bühler Extraction, %	-	76.6	-	-	-	75.0	74.8	73.4	74.4	-
FLOUR										
Protein (12% mb), %	-	10.5	-	-	-	12.4	10.6	9.6	9.3	-
Moisture, %	-	13.6	-	-	-	14.2	13.9	13.6	13.6	-
Ash (db), %	-	0.56	-	-	-	0.60	0.60	0.57	0.56	-
Colour, KJ (wet)	-	-5.0	-	-	-	-5.0	-4.8	-4.8	-5.0	-
Colour, Konica Minolta CM5 (dry)	-	93.58	-	-	-	93.79	93.74	93.69	93.90	-
L*	-	0.38	-	-	-	0.43	0.40	0.36	0.35	-
a*	-	9.89	-	-	-	9.83	9.38	9.55	10.23	-
b*	-									
RVA										
Peak Viscosity, cP	-	1213	-	-	-	1994	1553	1693	1676	-
Minimum viscosity (Trough), cP	-	948	-	-	-	1644	1360	1445	1459	-
Final Viscosity, cP	-	1339	-	-	-	2166	1680	1866	1914	
Peak Time, min	-	6.20	-	-	-	6.87	6.60	7.00	6.93	-
GLUTEN										
Wet gluten (14% mb), %	-	27.7	-	-	-	31.8	28.7	25.8	24.9	-
Dry gluten (14% mb), %	-	9.1	-	-	-	10.7	9.5	8.2	8.0	-
Gluten Index	-	98	-	-	-	93	95	96	96	-
FARINOGRAM										
Water absorption (14% mb), %	-	59.3	-	-	-	60.6	58.9	58.1	57.8	-
Development time, min	-	4.4	-	-	-	6.6	4.5	5.3	5.1	-
Stability, min	-	7.1	-	-	-	12.1	7.5	7.6	7.6	-
Mixing tolerance index, BU	-	60	-	-	-	36	54	58	57	-
EXTENSOGRAM (45 min pull)										
Area, cm²	-	102	-	-	-	121	104	89	74	-
Maximum height, BU	-	352	-	-	-	411	387	387	361	-
Extensibility, mm	-	213	-	-	-	218	199	169	151	-
ALVEOGRAM										
Strength (S), cm²	-	35.0	-	-	-	47.7	36.2	34.9	33.8	-
Stability (P), mm	-	63	-	-	-	79	64	78	83	-
Distensibility (L), mm	-	144	-	-	-	146	150	98	89	-
Configuration ratio (P/L)	-	0.44	-	-	-	0.54	0.43	0.80	0.93	-
MIXOGRAM										
Peak time, min	-	2.8	-	-	-	2.8	2.9	3.4	3.1	-
100 g BAKING TEST										
Loaf volume, cm³	-	1050	-	-	-	1194	1125	971	934	-
Evaluation (see page 78)	-	0	-	-	-	0	0	0	0	-

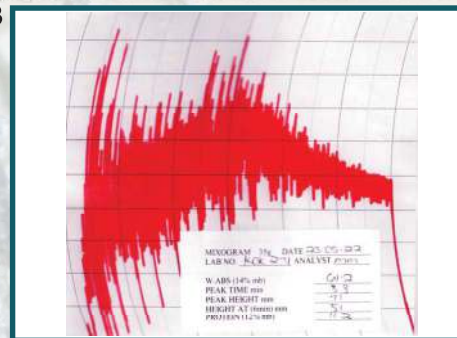
Rheological Graphs Per Production Region

MIXOGRAM

22

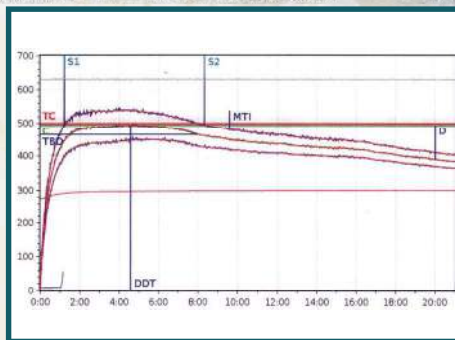


23

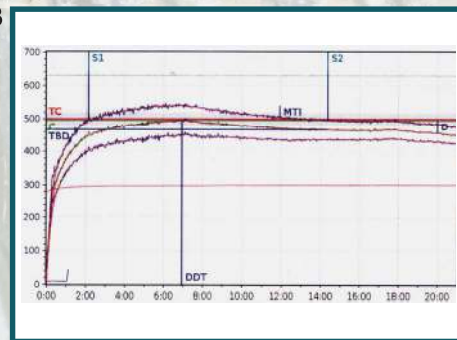


FARINOGRAM

22

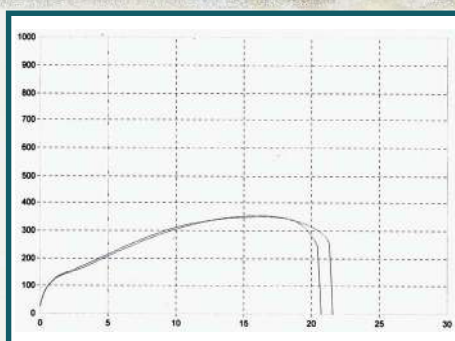


23

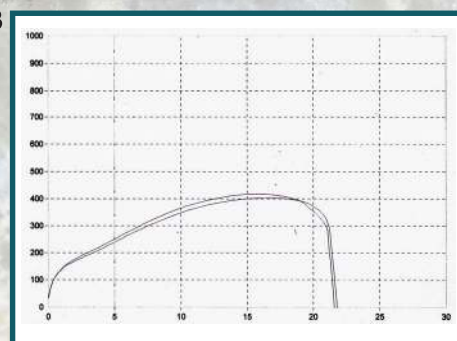


EXTENSOGRAM

22

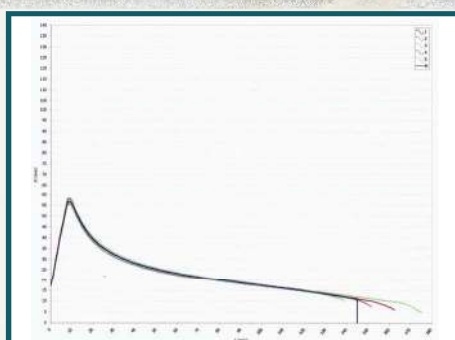


23

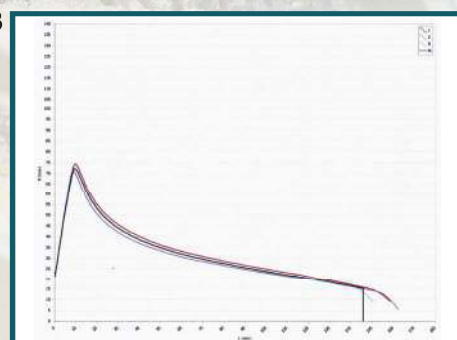


ALVEOGRAM

22



23



South African quality data per production region

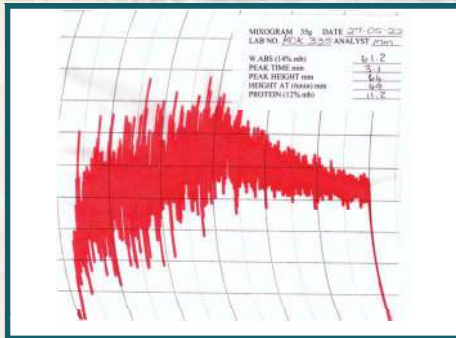
SUMMER RAINFALL AND IRRIGATION WHEAT

PRODUCTION REGION	(24) Free State Central Region				(25) Free State South-Western Region					
	ave	min	max	stdev	ave	min	max	stdev		
WHEAT										
Protein (12% mb), %	11.8	9.5	12.9	1.17	11.8	10.4	13.7	1.04		
Falling number, sec	336	232	448	60.82	241	145	372	71.29		
Moisture, %	11.4	10.5	13.2	0.70	10.9	10.1	12.0	0.58		
1000 Kernel mass (13% mb), g	41.4	33.3	47.9	4.04	39.5	37.9	43.5	1.86		
Hectolitre mass (dirty), kg/hl	78.5	71.7	82.8	3.04	82.3	77.6	83.7	2.23		
Screenings (<1.8 mm sieve), %	1.28	0.13	4.13	1.21	0.77	0.62	1.02	0.13		
Total damaged kernels, %	1.07	0.00	12.04	3.16	0.65	0.00	3.38	1.22		
Combined deviations, %	2.83	0.46	13.85	3.68	1.67	0.94	4.40	1.24		
Number of samples	14				7					
MIXOGRAM (Quadromat Junior)										
Peak time, min	3.1	1.8	4.2	0.64	4.0	2.9	5.8	0.98		
Tail height (6 min), mm	49	34	56	5.36	52	49	56	2.94		
Number of samples	14				7					
CLASS AND GRADE	COMPOSITE SAMPLES									
	Super	B1	B2	B3	COW	Super	B1	B2	B3	COW
Bühler Extraction, %	73.6	74.5	72.0	73.2	-	72.0	72.1	-	-	-
FLOUR										
Protein (12% mb), %	11.9	10.9	10.0	9.2	-	11.5	10.7	-	-	-
Moisture, %	14.4	14.3	13.4	13.9	-	13.6	13.5	-	-	-
Ash (db), %	0.61	0.63	0.69	0.57	-	0.51	0.56	-	-	-
Colour, KJ (wet)	-5.0	-5.0	-5.0	-4.4	-	-4.7	-5.0	-	-	-
Colour, Konica Minolta CM5 (dry)										
L*	93.67	93.99	92.90	93.84	-	92.82	93.58	-	-	-
a*	0.48	0.45	0.55	0.47	-	0.49	0.46	-	-	-
b*	9.95	8.81	11.59	9.89	-	10.81	10.42	-	-	-
RVA										
Peak Viscosity, cP	1835	1847	1789	2064	-	1548	1808	-	-	-
Minimum viscosity (Trough), cP	1536	1577	1317	1727	-	1347	1522	-	-	-
Final Viscosity, cP	1956	1978	2059	2340	-	1751	1994	-	-	-
Peak Time, min	6.93	6.93	7.00	7.00	-	6.80	6.87	-	-	-
GLUTEN										
Wet gluten (14% mb), %	33.4	28.4	24.3	23.6	-	30.8	28.4	-	-	-
Dry gluten (14% mb), %	10.7	9.4	8.1	7.8	-	10.3	9.1	-	-	-
Gluten Index	95	97	98	98	-	98	95	-	-	-
FARINOGRAM										
Water absorption (14% mb), %	60.9	58.5	65.5	58.8	-	63.9	61.7	-	-	-
Development time, min	6.5	6.2	5.4	4.2	-	6.2	6.1	-	-	-
Stability, min	10.1	9.3	11.6	7.5	-	12.1	10.4	-	-	-
Mixing tolerance index, BU	41	48	27	56	-	36	40	-	-	-
EXTENSOGAM (45 min pull)										
Area, cm²	122	132	85	81	-	83	103	-	-	-
Maximum height, BU	418	441	412	364	-	348	404	-	-	-
Extensibility, mm	218	220	155	162	-	176	185	-	-	-
ALVEOGRAM										
Strength (S), cm²	45.1	42.7	50.9	38.4	-	49.1	43.4	-	-	-
Stability (P), mm	77	73	187	93	-	126	111	-	-	-
Distensibility (L), mm	145	148	45	95	-	81	81	-	-	-
Configuration ratio (P/L)	0.53	0.49	4.16	0.98	-	1.56	1.37	-	-	-
MIXOGRAM										
Peak time, min	2.8	3.3	3.1	3.0	-	2.9	3.1	-	-	-
100 g BAKING TEST										
Loaf volume, cm³	1128	1060	806	974	-	1043	1031	-	-	-
Evaluation (see page 78)	0	0	0	0	-	0	0	-	-	-

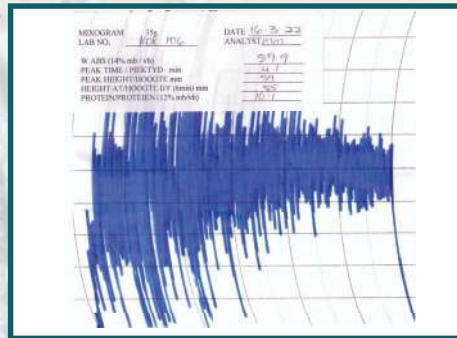
Rheological Graphs Per Production Region

MIXOGRAM

24

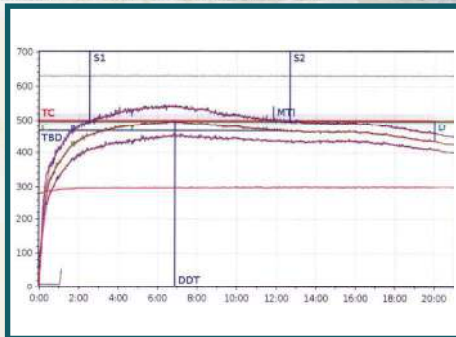


25

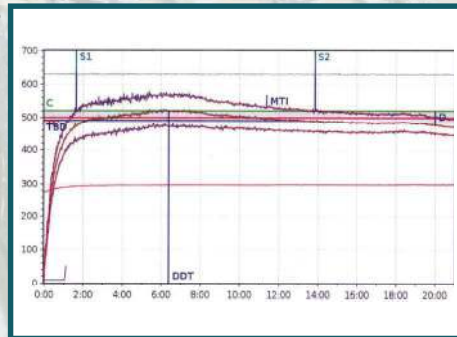


FARINOGRAM

24

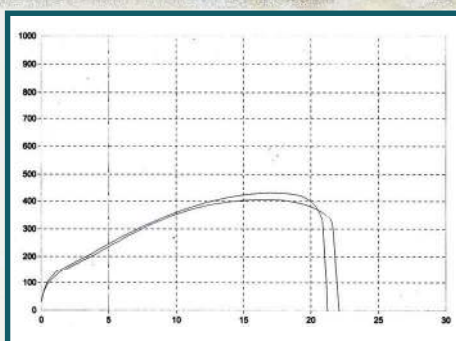


25

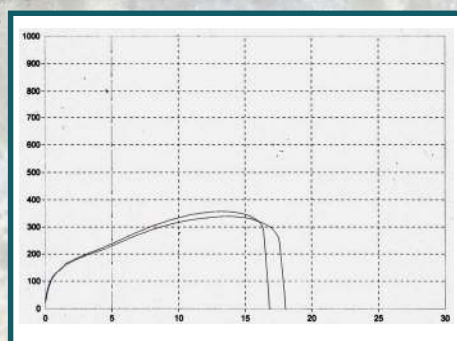


EXTENSOGRAM

24

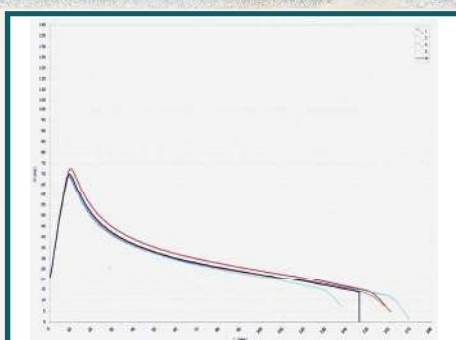


25

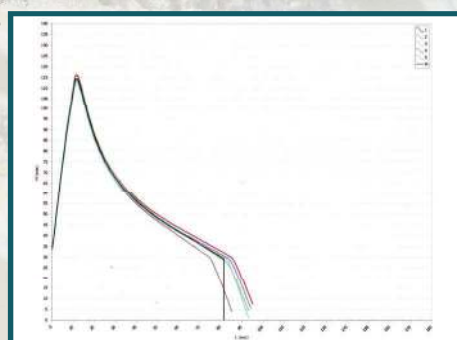


ALVEOGRAM

24



25



South African quality data per production region

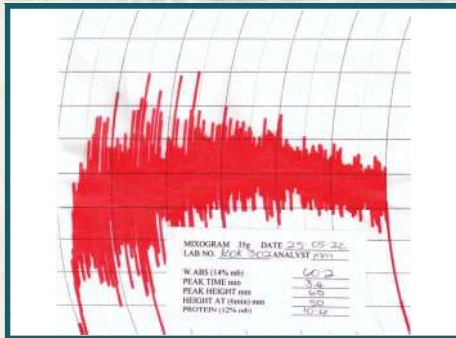
SUMMER RAINFALL AND IRRIGATION WHEAT

PRODUCTION REGION	(26) Free State South-Eastern Region				(27) Free State Northern Region					
WHEAT										
	ave	min	max	stdev	ave	min	max	stdev		
Protein (12% mb), %	12.1	9.6	14.7	1.49	13.6	12.7	14.3	0.83		
Falling number, sec	302	186	429	73.58	273	144	341	111.50		
Moisture, %	11.3	10.7	12.1	0.52	11.6	11.6	11.7	0.06		
1000 Kernel mass (13% mb), g	38.9	28.3	48.0	5.08	38.5	37.9	38.9	0.53		
Hectolitre mass (dirty), kg/hl	79.3	73.3	83.7	2.41	78.9	77.8	80.8	1.65		
Screenings (<1.8 mm sieve), %	1.56	0.13	6.73	1.62	0.46	0.05	1.11	0.57		
Total damaged kernels, %	0.53	0.08	1.98	0.52	1.15	0.12	2.42	1.17		
Combined deviations, %	2.38	0.21	8.03	1.81	1.68	0.17	3.73	1.84		
Number of samples	19				3					
MIXOGRAM (Quadromat Junior)										
	ave	min	max	stdev	ave	min	max	stdev		
Peak time, min	3.5	2.7	5.8	0.71	3.0	2.7	3.3	0.31		
Tail height (6 min), mm	50	46	63	4.46	49	42	54	6.11		
Number of samples	19				3					
CLASS AND GRADE	COMPOSITE SAMPLES									
	Super	B1	B2	B3	COW	Super	B1	B2	B3	COW
Bühler Extraction, %	73.0	74.5	69.7	-	73.7	73.6	-	-	-	-
FLOUR										
Protein (12% mb), %	12.1	10.6	9.2	-	11.9	13.3	-	-	-	-
Moisture, %	13.8	14.0	13.4	-	13.8	13.9	-	-	-	-
Ash (db), %	0.60	0.61	0.57	-	0.53	0.63	-	-	-	-
Colour, KJ (wet)	-5.0	-5.0	-5.0	-	-4.7	-5.0	-	-	-	-
Colour, Konica Minolta CM5 (dry)										
L*	93.08	94.07	94.11	-	93.05	93.17	-	-	-	-
a*	0.55	0.42	0.40	-	0.54	0.50	-	-	-	-
b*	10.25	9.25	8.57	-	9.91	9.77	-	-	-	-
RVA										
Peak Viscosity, cP	1866	2055	2705	-	1308	1876	-	-	-	-
Minimum viscosity (Trough), cP	1587	1689	1970	-	1047	1545	-	-	-	-
Final Viscosity, cP	2054	2235	2981	-	1415	1974	-	-	-	-
Peak Time, min	6.67	7.00	7.00	-	6.27	7.00	-	-	-	-
GLUTEN										
Wet gluten (14% mb), %	28.9	28.4	23.2	-	32.3	34.9	-	-	-	-
Dry gluten (14% mb), %	10.0	9.2	7.7	-	10.9	11.9	-	-	-	-
Gluten Index	99	96	97	-	97	94	-	-	-	-
FARINOGRAM										
Water absorption (14% mb), %	58.7	59.4	57.0	-	61.1	63.4	-	-	-	-
Development time, min	14.3	4.0	4.3	-	4.4	8.5	-	-	-	-
Stability, min	20.0	9.0	9.1	-	9.4	12.2	-	-	-	-
Mixing tolerance index, BU	20	36	42	-	39	37	-	-	-	-
EXTENSOGRAM (45 min pull)										
Area, cm²	139	108	99	-	112	123	-	-	-	-
Maximum height, BU	619	442	342	-	392	412	-	-	-	-
Extensibility, mm	171	181	210	-	213	223	-	-	-	-
ALVEOGRAM										
Strength (S), cm²	59.2	45.6	35.0	-	46.2	56.6	-	-	-	-
Stability (P), mm	110	88	79	-	84	95	-	-	-	-
Distensibility (L), mm	101	117	109	-	129	136	-	-	-	-
Configuration ratio (P/L)	1.09	0.75	0.72	-	0.65	0.70	-	-	-	-
MIXOGRAM										
Peak time, min	5.1	3.2	3.2	-	3.8	2.8	-	-	-	-
100 g BAKING TEST										
Loaf volume, cm³	1129	1031	914	-	1175	1260	-	-	-	-
Evaluation (see page 78)	0	0	0	-	0	0	-	-	-	-

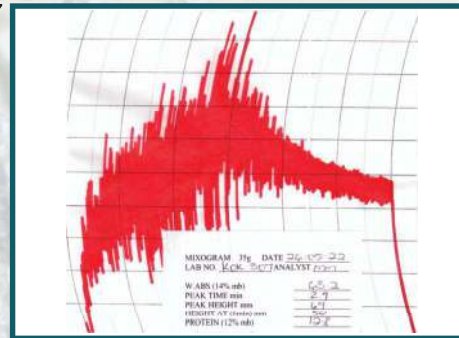
Rheological Graphs Per Production Region

MIXOGRAM

26

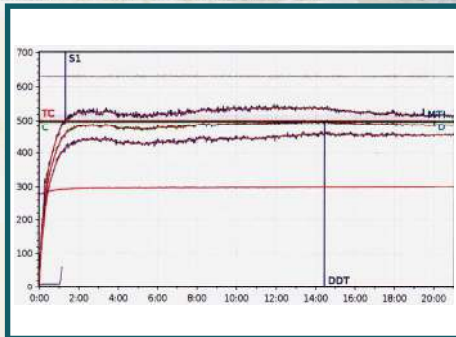


27

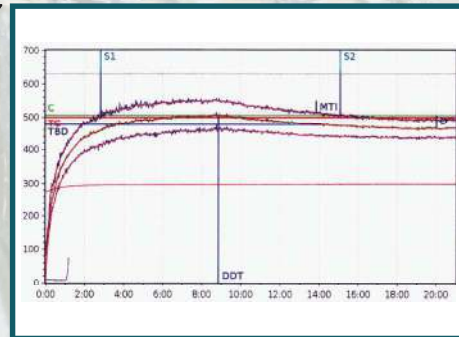


FARINOGRAM

26

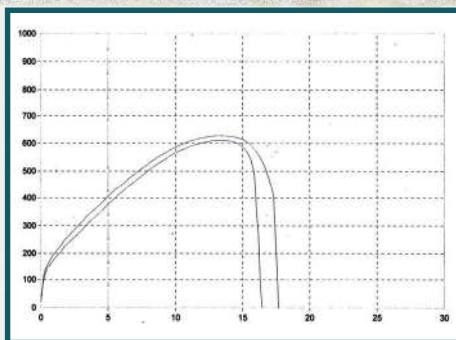


27

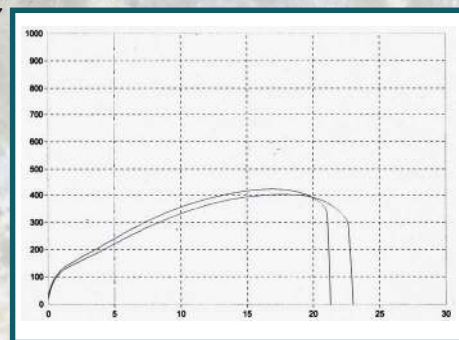


EXTENSOGRAM

26

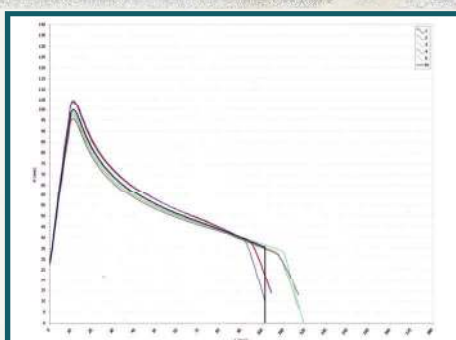


27

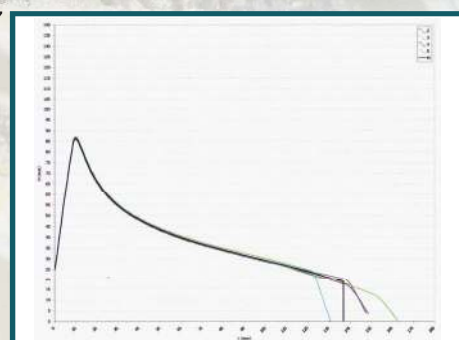


ALVEOGRAM

26



27



South African quality data per production region

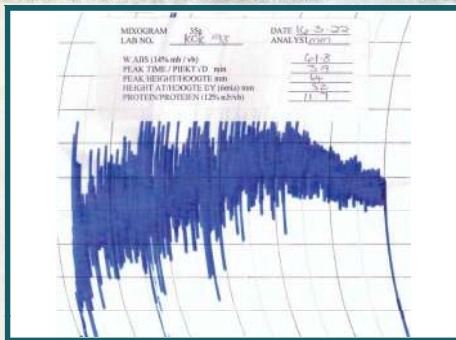
IRRIGATION WHEAT

PRODUCTION REGION	(28)				(29)					
	Free State Eastern Region				Mpumalanga Southern Region					
WHEAT										
	ave	min	max	stdev	ave	min	max	stdev		
Protein (12% mb), %	12.7	10.0	13.8	0.91	9.97	-	-	-		
Falling number, sec	244	80	372	73.96	372	-	-	-		
Moisture, %	11.7	10.4	13.6	0.80	12.2	-	-	-		
1000 Kernel mass (13% mb), g	38.9	34.2	45.2	3.08	43.2	-	-	-		
Hectolitre mass (dirty), kg/hl	80.0	72.4	83.4	2.51	79.9	-	-	-		
Screenings (<1.8 mm sieve), %	0.80	0.05	2.01	0.50	0.94	-	-	-		
Total damaged kernels, %	0.87	0.22	1.70	0.53	0.24	-	-	-		
Combined deviations, %	1.97	0.72	3.53	0.86	2.04	-	-	-		
Number of samples	17				1					
MIXOGRAM (Quadromat Junior)										
	ave	min	max	stdev	ave	min	max	stdev		
Peak time, min	3.8	2.6	4.9	0.76	2.9	-	-	-		
Tail height (6 min), mm	52	44	67	5.46	45	-	-	-		
Number of samples	17				1					
CLASS AND GRADE	COMPOSITE SAMPLES									
	Super	B1	B2	B3	COW	Super	B1	B2	B3	COW
Bühler Extraction, %	73.2	74.0	72.1	-	-	-	-	-	74.4	-
FLOUR										
Protein (12% mb), %	11.9	11.3	10.4	-	-	-	-	-	9.1	-
Moisture, %	13.5	13.7	13.5	-	-	-	-	-	13.6	-
Ash (db), %	0.61	0.63	0.60	-	-	-	-	-	0.64	-
Colour, KJ (wet)	-4.6	-5.0	-5.0	-	-	-	-	-	-5.0	-
Colour, Konica Minolta CM5 (dry)										
L*	93.50	93.66	93.29	-	-	-	-	-	93.77	-
a*	0.45	0.48	0.37	-	-	-	-	-	0.50	-
b*	9.06	9.62	10.16	-	-	-	-	-	9.43	-
RVA										
Peak Viscosity, cP	1464	1867	2165	-	-	-	-	-	2498	-
Minimum viscosity (Trough), cP	1268	1554	1726	-	-	-	-	-	1920	-
Final Viscosity, cP	1569	2003	2491	-	-	-	-	-	2871	-
Peak Time, min	6.60	7.00	7.00	-	-	-	-	-	7.00	-
GLUTEN										
Wet gluten (14% mb), %	31.6	26.8	27.6	-	-	-	-	-	23.6	-
Dry gluten (14% mb), %	10.7	8.8	9.1	-	-	-	-	-	7.6	-
Gluten Index	97	96	92	-	-	-	-	-	94	-
FARINOGRAM										
Water absorption (14% mb), %	60.8	59.3	60.8	-	-	-	-	-	57.6	-
Development time, min	6.2	7.1	4.1	-	-	-	-	-	3.3	-
Stability, min	10.4	11.3	6.6	-	-	-	-	-	7.1	-
Mixing tolerance index, BU	39	42	51	-	-	-	-	-	50	-
EXTENSOGRAM (45 min pull)										
Area, cm²	126	134	67	-	-	-	-	-	67	-
Maximum height, BU	458	456	291	-	-	-	-	-	303	-
Extensibility, mm	206	218	161	-	-	-	-	-	160	-
ALVEOGRAM										
Strength (S), cm²	48.8	44.8	37.9	-	-	-	-	-	32.3	-
Stability (P), mm	82	79	105	-	-	-	-	-	83	-
Distensibility (L), mm	141	141	83	-	-	-	-	-	95	-
Configuration ratio (P/L)	0.58	0.56	1.27	-	-	-	-	-	0.87	-
MIXOGRAM										
Peak time, min	3.3	3.3	2.6	-	-	-	-	-	2.9	-
100 g BAKING TEST										
Loaf volume, cm³	1105	1219	1018	-	-	-	-	-	928	-
Evaluation (see page 78)	0	0	0	-	-	-	-	-	0	-

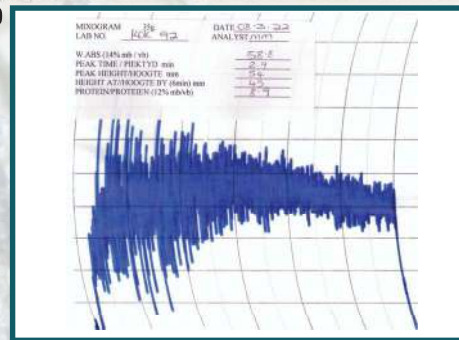
Rheological Graphs Per Production Region

MIXOGRAM

28

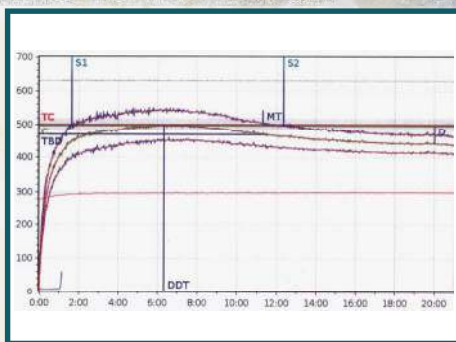


29

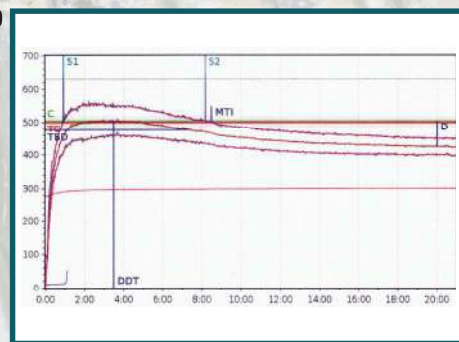


FARINOGRAM

28

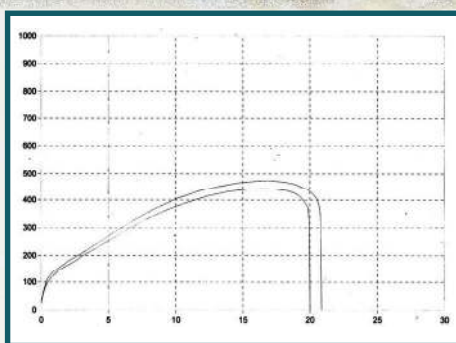


29

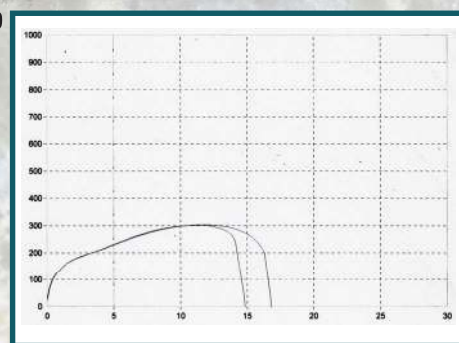


EXTENSOGRAM

28

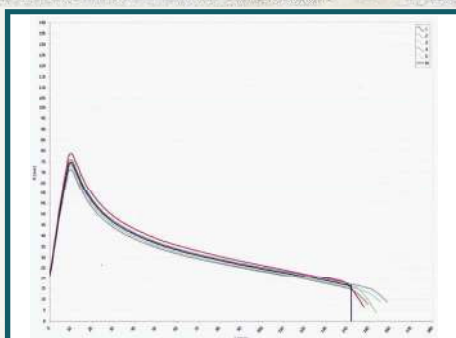


29

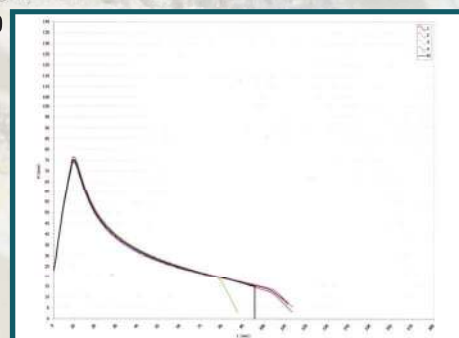


ALVEOGRAM

28



29



South African quality data per production region

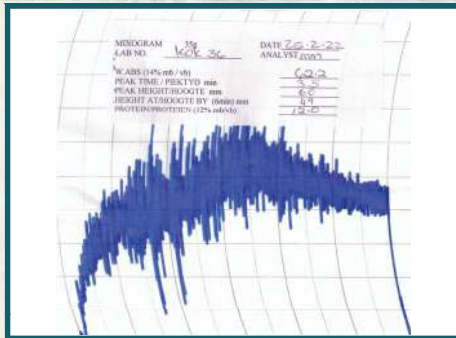
IRRIGATION WHEAT

PRODUCTION REGION	(33) Mpumalanga Northern Region				(34) Gauteng Region					
	ave	min	max	stdev	ave	min	max	stdev		
WHEAT										
Protein (12% mb), %	12.0	9.6	13.4	1.13	12.9	11.8	14.2	0.86		
Falling number, sec	366	255	417	60.31	235	118	345	110.07		
Moisture, %	11.4	10.9	11.7	0.29	11.8	11.5	12.1	0.28		
1000 Kernel mass (13% mb), g	40.0	34.4	45.0	2.69	37.4	32.3	41.1	3.38		
Hectolitre mass (dirty), kg/hl	82.8	81.5	84.6	1.11	78.7	73.0	82.3	3.87		
Screenings (<1.8 mm sieve), %	0.82	0.29	1.57	0.47	2.59	1.59	3.84	0.94		
Total damaged kernels, %	0.62	0.00	1.28	0.46	1.80	0.14	3.28	1.43		
Combined deviations, %	1.61	0.81	3.01	0.69	4.82	2.50	7.44	1.82		
Number of samples	10				5					
MIXOGRAM (Quadromat Junior)										
Peak time, min	3.5	3.0	4.0	0.27	3.1	2.9	3.3	0.18		
Tail height (6 min), mm	50	43	52	2.66	49	45	51	2.51		
Number of samples	10				5					
CLASS AND GRADE	COMPOSITE SAMPLES									
	Super	B1	B2	B3	COW	Super	B1	B2	B3	COW
Bühler Extraction, %	74.6	74.3	75.1	74.9	-	74.7	-	-	-	-
FLOUR										
Protein (12% mb), %	12.0	10.8	10.0	8.6	-	12.0	-	-	-	-
Moisture, %	13.9	13.6	13.9	13.3	-	14.0	-	-	-	-
Ash (db), %	0.58	0.58	0.69	0.65	-	0.58	-	-	-	-
Colour, KJ (wet)	-4.7	-4.9	-5.0	-5.0	-	-5.0	-	-	-	-
Colour, Konica Minolta CM5 (dry)										
L*	93.32	93.57	93.40	93.58	-	93.89	-	-	-	-
a*	0.56	0.47	0.60	0.59	-	0.47	-	-	-	-
b*	10.04	9.68	10.54	10.32	-	8.61	-	-	-	-
RVA										
Peak Viscosity, cP	2379	2002	2384	2331	-	1985	-	-	-	-
Minimum viscosity (Trough), cP	1857	1711	1840	1602	-	1617	-	-	-	-
Final Viscosity, cP	2651	2141	2625	2643	-	2149	-	-	-	-
Peak Time, min	7.00	6.87	7.00	7.00	-	7.00	-	-	-	-
GLUTEN										
Wet gluten (14% mb), %	31.9	29.5	26.1	22.5	-	32.8	-	-	-	-
Dry gluten (14% mb), %	11.1	9.7	8.5	7.4	-	10.9	-	-	-	-
Gluten Index	95	95	96	96	-	95	-	-	-	-
FARINOGRAM										
Water absorption (14% mb), %	60.7	59.6	59.0	56.1	-	61.5	-	-	-	-
Development time, min	6.5	5.5	5.1	5.1	-	5.3	-	-	-	-
Stability, min	12.1	8.3	8.2	7.5	-	10.3	-	-	-	-
Mixing tolerance index, BU	30	52	54	53	-	38	-	-	-	-
EXTENSOGAM (45 min pull)										
Area, cm²	125	107	107	71	-	110	-	-	-	-
Maximum height, BU	409	415	430	404	-	344	-	-	-	-
Extensibility, mm	232	190	182	125	-	233	-	-	-	-
ALVEOGRAM										
Strength (S), cm²	48.9	40.2	39.9	28.9	-	45.1	-	-	-	-
Stability (P), mm	81	79	86	76	-	76	-	-	-	-
Distensibility (L), mm	145	120	113	94	-	159	-	-	-	-
Configuration ratio (P/L)	0.56	0.66	0.76	0.81	-	0.48	-	-	-	-
MIXOGRAM										
Peak time, min	2.9	3.1	3.2	3.1	-	2.7	-	-	-	-
100 g BAKING TEST										
Loaf volume, cm³	1163	1072	997	876	-	1106	-	-	-	-
Evaluation (see page 78)	0	0	0	0	-	0	-	-	-	-

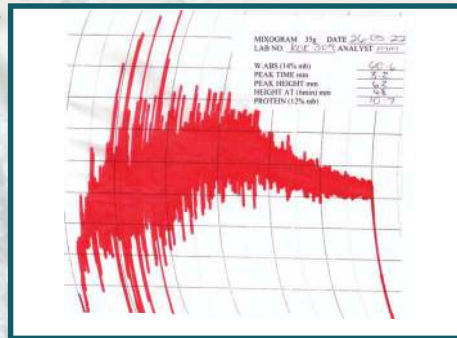
Rheological Graphs Per Production Region

MIXOGRAM

33

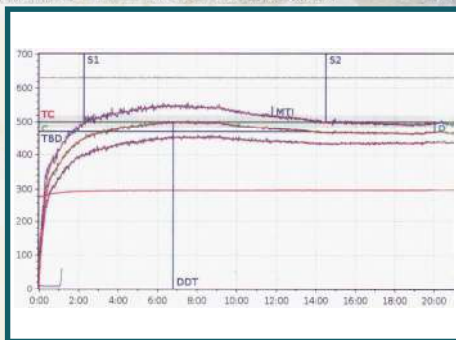


34

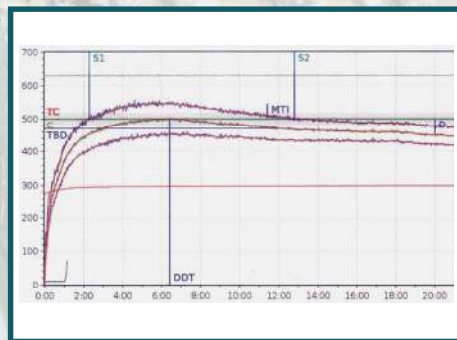


FARINOGRAM

33

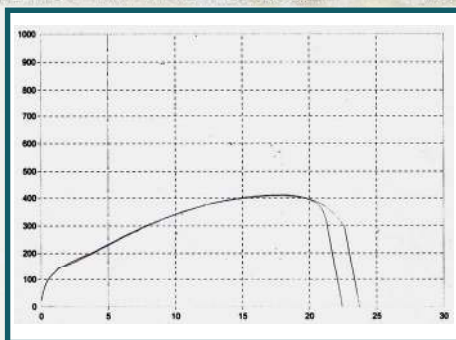


34

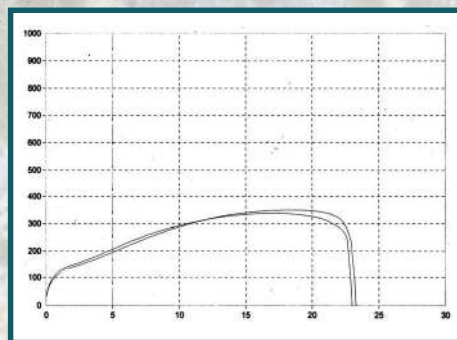


EXTENSOGRAM

33

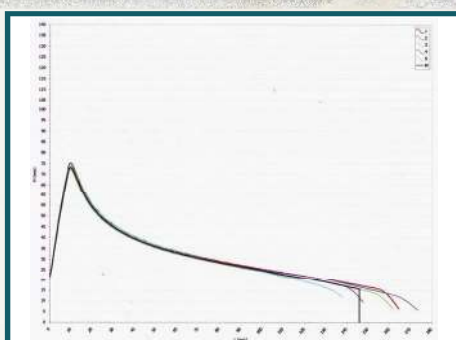


34

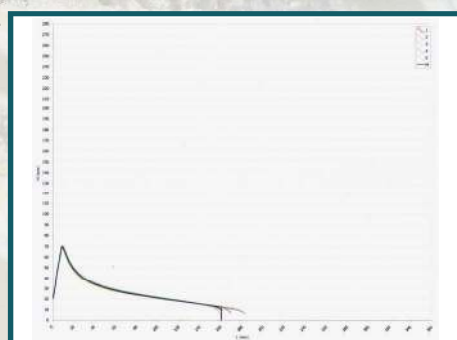


ALVEOGRAM

33



34



South African quality data per production region

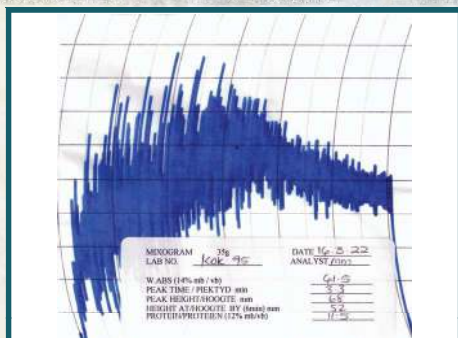
IRRIGATION WHEAT

PRODUCTION REGION	(35) Limpopo Region				(36) KwaZulu-Natal					
WHEAT										
	ave	min	max	stdev	ave	min	max	stdev		
Protein (12% mb), %	12.1	11.9	12.3	0.28	12.9	11.6	14.1	0.78		
Falling number, sec	345	279	411	93.34	216	73	391	103.51		
Moisture, %	10.6	10.2	11.0	0.57	11.2	10.9	11.6	0.26		
1000 Kernel mass (13% mb), g	37.7	34.1	41.3	5.09	39.2	34.3	43.8	2.98		
Hectolitre mass (dirty), kg/hl	83.6	83.5	83.7	0.14	81.9	79.2	83.7	1.25		
Screenings (<1.8 mm sieve), %	0.89	0.68	1.10	0.30	1.21	0.33	2.48	0.70		
Total damaged kernels, %	1.42	0.30	2.54	1.58	0.88	0.04	3.60	0.96		
Combined deviations, %	2.31	0.98	3.64	1.88	2.44	0.37	5.46	1.31		
Number of samples	2				13					
MIXOGRAM (Quadromat Junior)										
	ave	min	max	stdev	ave	min	max	stdev		
Peak time, min	3.1	2.8	3.3	0.35	3.1	2.7	3.9	0.36		
Tail height (6 min), mm	51	49	52	2.12	50	45	54	2.54		
Number of samples	2				13					
CLASS AND GRADE	COMPOSITE SAMPLES									
	Super	B1	B2	B3	COW	Super	B1	B2	B3	COW
Bühler Extraction, %	-	72.4	-	-	-	74.1	74.7	-	-	-
FLOUR										
Protein (12% mb), %	-	11.3	-	-	-	12.1	10.8	-	-	-
Moisture, %	-	13.7	-	-	-	14.1	13.7	-	-	-
Ash (db), %	-	0.63	-	-	-	0.57	0.58	-	-	-
Colour, KJ (wet)	-	-5.0	-	-	-	-5.0	-5.0	-	-	-
Colour, Konica Minolta CM5 (dry)										
L*	-	93.78	-	-	-	93.55	93.69	-	-	-
a*	-	0.47	-	-	-	0.49	0.45	-	-	-
b*	-	10.01	-	-	-	9.81	10.58	-	-	-
RVA										
Peak Viscosity, cP	-	2401	-	-	-	1703	2116	-	-	-
Minimum viscosity (Trough), cP	-	1767	-	-	-	1473	1762	-	-	-
Final Viscosity, cP	-	2639	-	-	-	1841	2333	-	-	-
Peak Time, min	-	7.00	-	-	-	6.67	6.93	-	-	-
GLUTEN										
Wet gluten (14% mb), %	-	30.1	-	-	-	34.0	29.5	-	-	-
Dry gluten (14% mb), %	-	9.9	-	-	-	11.3	9.4	-	-	-
Gluten Index	-	98	-	-	-	94	94	-	-	-
FARINOGRAM										
Water absorption (14% mb), %	-	60.3	-	-	-	61.7	60.7	-	-	-
Development time, min	-	7.0	-	-	-	6.1	5.6	-	-	-
Stability, min	-	12.2	-	-	-	9.4	8.2	-	-	-
Mixing tolerance index, BU	-	36	-	-	-	39	44	-	-	-
EXTENSOGRAM (45 min pull)										
Area, cm²	-	144	-	-	-	81	93	-	-	-
Maximum height, BU	-	516	-	-	-	373	346	-	-	-
Extensibility, mm	-	209	-	-	-	155	199	-	-	-
ALVEOGRAM										
Strength (S), cm²	-	50.0	-	-	-	47.6	39.5	-	-	-
Stability (P), mm	-	89	-	-	-	83	79	-	-	-
Distensibility (L), mm	-	131	-	-	-	147	126	-	-	-
Configuration ratio (P/L)	-	0.68	-	-	-	0.56	0.63	-	-	-
MIXOGRAM										
Peak time, min	-	2.9	-	-	-	2.7	2.7	-	-	-
100 g BAKING TEST										
Loaf volume, cm³	-	1067	-	-	-	1134	1010	-	-	-
Evaluation (see page 78)	-	0	-	-	-	0	0	-	-	-

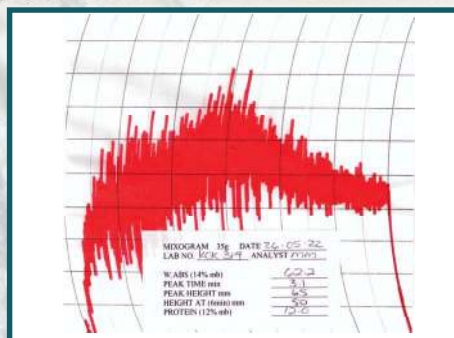
Rheological Graphs Per Production Region

MIXOGRAM

35

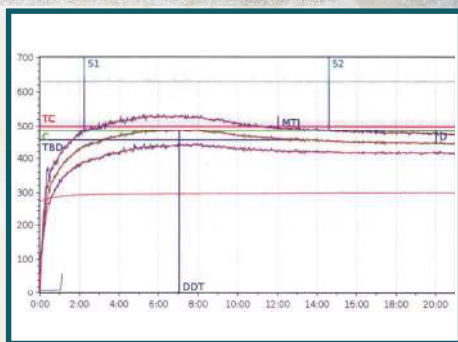


36

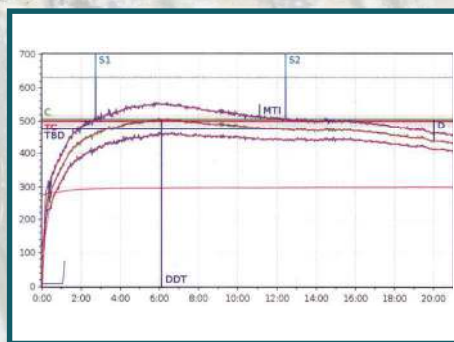


FARINOGRAM

35

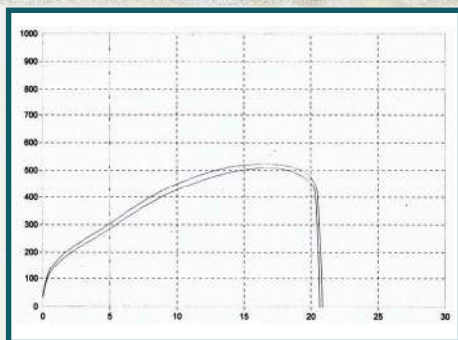


36

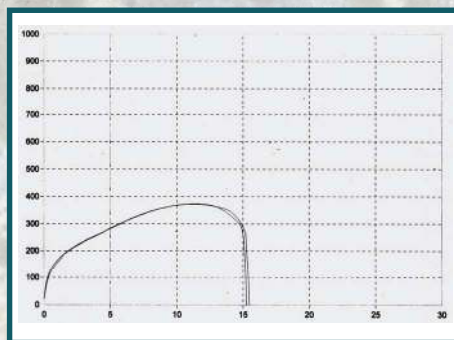


EXTENSOGRAM

35

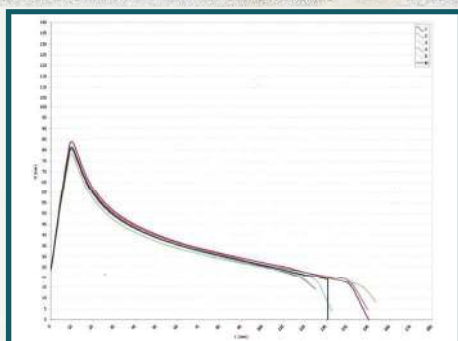


36



ALVEOGRAM

35



36

