

# South African Quality data per production region

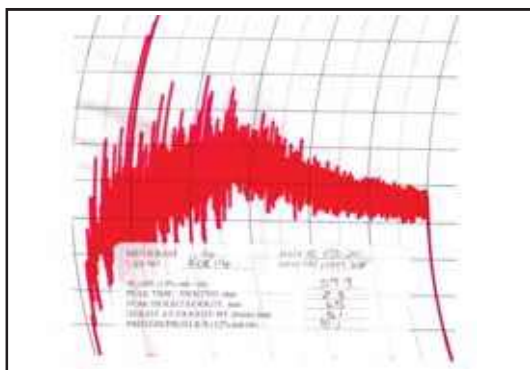
## WINTER RAINFALL WHEAT

PRODUCTION REGION	(1) Namakwaland Region					(2) Swartland Western Region				
WHEAT	ave	min	max	stdev		ave	min	max	stdev	
Protein (12% mb), %	12.4	11.4	14.3	1.32		11.9	9.7	13.2	1.06	
Falling number, sec	423	411	437	13.23		381	344	449	35.86	
Moisture, %	9.8	9.7	10.0	0.14		10.7	10.3	11.0	0.22	
1000 Kernel mass (13% mb), g	37.6	35.0	40.3	2.34		33.6	29.9	40.8	3.33	
Hectolitre mass (dirty), kg/hl	76.6	74.8	77.8	1.31		76.6	74.3	80.3	1.99	
Screenings (<1.8 mm sieve), %	3.63	3.58	3.67	0.04		2.34	0.49	4.97	1.67	
Total damaged kernels, %	0.71	0.62	0.84	0.10		0.18	0.00	0.40	0.18	
Combined deviations, %	4.75	4.48	5.11	0.29		3.02	1.29	5.57	1.66	
Number of samples	4					11				
CULTIVARS										
	SST 056 26.3					SST 0117 19.5				
cultivars	SST 0127 26.0					SST 0166 17.7				
with highest %	SST 087 16.5					SST 88 16.2				
occurrence	SST 0117 12.8					SST 0127 12.8				
	SST 0166 8.5					SST 087 12.0				
Number of samples	4					11				
MIXOGRAM (Quadromat Junior)	ave	min	max	stdev		ave	min	max	stdev	
Peak time, min	2.7	2.5	2.9	0.17		3.2	2.9	4.0	0.36	
Tail height (6 min), mm	50	46	52	2.63		47	40	52	3.47	
Number of samples	4					11				
	COMPOSITE SAMPLES									
CLASS AND GRADE	Super	B1	B2	B3	COW	Super	B1	B2	B3	COW
Bühler Extraction, %	-	-	-	-	72.9	74.1	-	72.5	72.3	74.5
FLOUR										
Protein (12% mb), %	-	-	-	-	11.7	11.8	-	10.7	12.0	10.7
Moisture, %	-	-	-	-	14.0	13.8	-	13.9	13.7	13.6
Ash (db), %	-	-	-	-	0.68	0.74	-	0.71	0.66	0.61
Colour, KJ (wet)	-	-	-	-	-4.8	-4.4	-	-4.5	-4.6	-4.7
Colour, Konica Minolta CM5 (dry)										
L*	-	-	-	-	94.30	93.68	-	93.93	94.03	94.03
a*	-	-	-	-	0.40	0.35	-	0.33	0.35	0.36
b*	-	-	-	-	9.64	10.98	-	10.21	10.54	10.42
RVA										
Peak Viscosity, cP	-	-	-	-	2197	2110	-	2159	2217	2173
Minimum viscosity (Trough), cP	-	-	-	-	1407	1497	-	1560	1529	1590
Final Viscosity, cP	-	-	-	-	2533	2439	-	2502	2571	2505
Peak Time, min	-	-	-	-	7.00	7.00	-	7.00	7.00	7.00
GLUTEN										
Wet gluten (14% mb), %	-	-	-	-	31.2	30.8	-	28.4	32.0	28.3
Dry gluten (14% mb), %	-	-	-	-	10.8	10.6	-	9.4	10.9	9.7
Gluten Index	-	-	-	-	98	93	-	93	95	96
FARINOGRAM										
Water absorption (14% mb), %	-	-	-	-	60.8	57.4	-	58.0	58.6	56.9
Development time, min	-	-	-	-	5.5	5.0	-	4.3	5.7	4.7
Stability, min	-	-	-	-	6.9	8.5	-	7.7	9.4	7.6
Mixing tolerance index, BU	-	-	-	-	42	31	-	35	33	37
EXTENSOGRAM (45 min pull)										
Area, cm²	-	-	-	-	115	106	-	97	110	96
Maximum height, BU	-	-	-	-	388	358	-	366	379	370
Extensibility, mm	-	-	-	-	212	210	-	186	201	186
ALVEOGRAM										
Strength (S), cm²	-	-	-	-	41.4	38.2	-	38.6	43.0	34.1
Stability (P), mm	-	-	-	-	81	62	-	73	71	65
Distensibility (L), mm	-	-	-	-	141	194	-	153	180	138
Configuration ratio (P/L)	-	-	-	-	0.57	0.32	-	0.48	0.39	0.47
MIXOGRAM										
Peak time, min	-	-	-	-	2.3	2.6	-	2.6	2.4	2.9
100 g BAKING TEST										
Loaf volume, cm³	-	-	-	-	1064	1156	-	1085	1171	1125
Evaluation (see page 79)	-	-	-	-	0	0	-	0	0	0

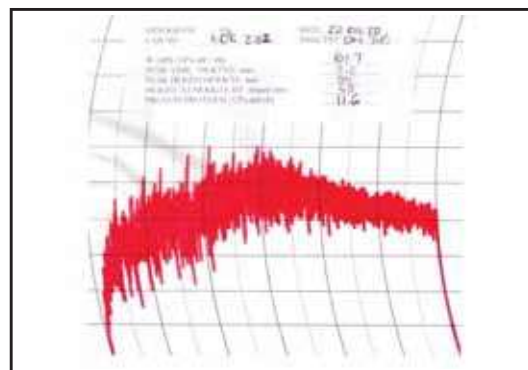
# RHEOLOGICAL GRAPHS PER PRODUCTION REGION

## MIXOGRAM

1

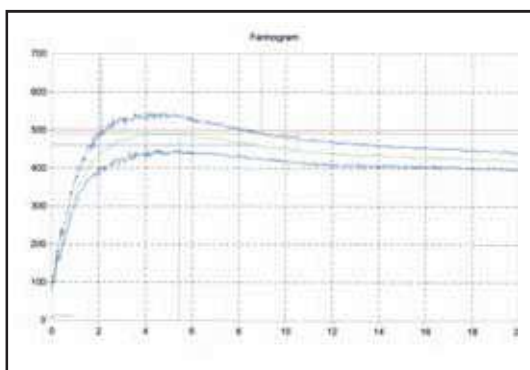


2

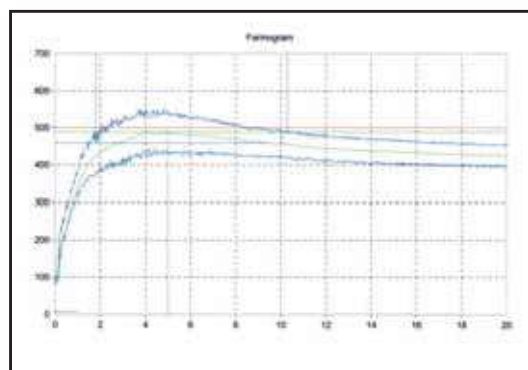


## FARINOGRAM

1

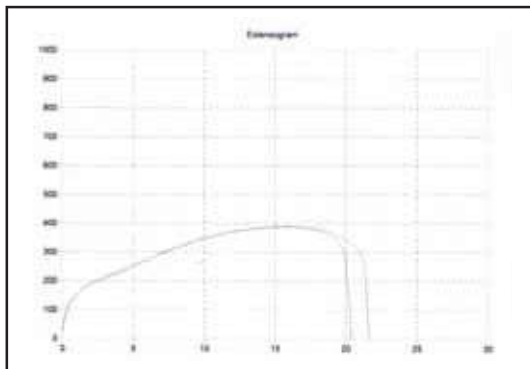


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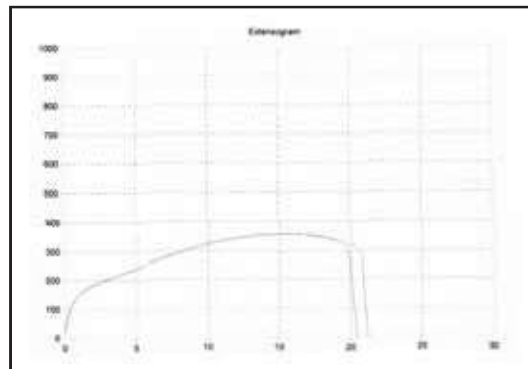


## EXTENSOGRAM

1

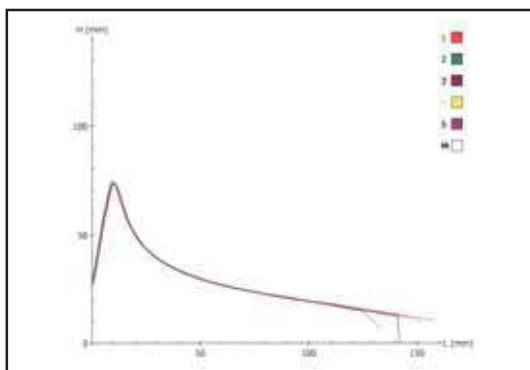


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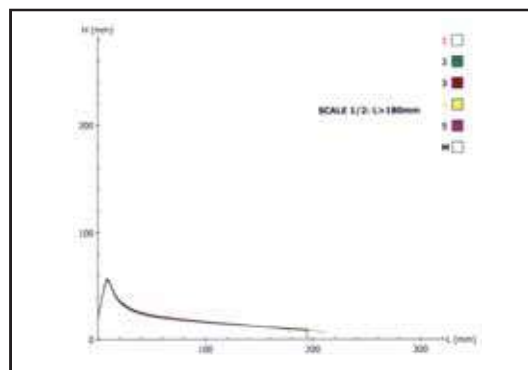


## ALVEOGRAM

1



2



# South African Quality data per production region

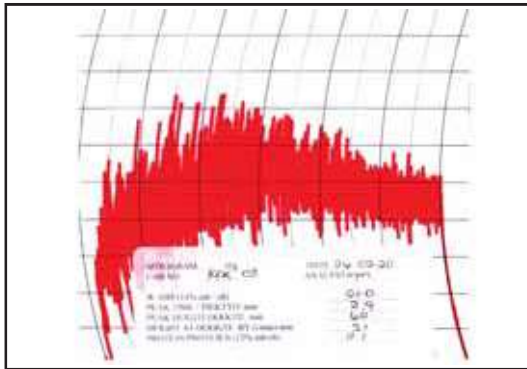
## WINTER RAINFALL WHEAT

PRODUCTION REGION	(3) Swartland Central Region					(4) Swartland Eastern Region				
WHEAT	ave	min	max	stdev		ave	min	max	stdev	
Protein (12% mb), %	13.3	11.1	16.0	1.10		12.2	10.2	13.5	0.93	
Falling number, sec	362	284	441	36.36		353	286	407	39.21	
Moisture, %	10.3	8.7	11.2	0.51		10.1	9.2	11.0	0.49	
1000 Kernel mass (13% mb), g	32.0	23.8	38.1	3.41		32.5	28.2	35.6	1.74	
Hectolitre mass (dirty), kg/hl	75.8	71.0	79.3	2.08		77.1	73.9	80.9	1.93	
Screenings (<1.8 mm sieve), %	3.09	0.54	6.68	1.35		2.35	0.27	3.94	1.31	
Total damaged kernels, %	0.16	0.00	0.38	0.11		0.30	0.08	0.68	0.18	
Combined deviations, %	4.12	0.88	8.52	1.80		3.50	0.78	6.02	1.67	
Number of samples	41					21				
CULTIVARS										
	SST 0117 27.0					SST 0117 25.5				
cultivars	SST 0127 18.4					SST 0166 20.2				
with highest %	SST 0166 17.1					SST 0127 19.8				
occurrence	SST 087 12.0					SST 056 13.0				
	SST 056 10.1					SST 087 10.8				
Number of samples	41					21				
MIXOGRAM (Quadromat Junior)										
	ave	min	max	stdev		ave	min	max	stdev	
Peak time, min	2.9	2.6	3.4	0.22		3.1	2.5	3.8	0.36	
Tail height (6 min), mm	51	46	59	2.75		48	40	53	2.80	
Number of samples	41					21				
	COMPOSITE SAMPLES									
CLASS AND GRADE	Super	B1	B2	B3	COW	Super	B1	B2	B3	COW
Bühler Extraction, %	74.3	74.7	75.1	73.4	73.2	73.2	74.0	74.4	74.7	74.4
FLOUR										
Protein (12% mb), %	12.2	11.2	10.5	12.6	13.3	13.0	11.4	10.5	11.0	11.6
Moisture, %	13.6	14.0	13.8	13.5	13.4	13.4	14.1	14.1	13.8	13.4
Ash (db), %	0.61	0.60	0.59	0.61	0.66	0.59	0.61	0.63	0.60	0.63
Colour, KJ (wet)	-4.7	-4.8	-4.6	-4.8	-4.7	-4.9	-5.0	-4.9	-5.0	-4.9
Colour, Konica Minolta CM5 (dry)										
L*	94.02	94.06	93.79	94.02	93.86	94.12	94.11	93.67	94.12	93.98
a*	0.43	0.35	0.48	0.41	0.49	0.41	0.39	0.41	0.34	0.44
b*	9.99	10.41	10.32	10.54	10.69	10.67	10.48	10.44	10.11	10.47
RVA										
Peak Viscosity, cP	1284	2096	2226	2012	2085	1942	1975	2089	1924	2088
Minimum viscosity (Trough), cP	1130	1624	1764	1536	1554	1457	1506	1562	1486	1547
Final Viscosity, cP	1431	2349	2499	2229	2328	2204	2268	2445	2167	2383
Peak Time, min	6.47	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
GLUTEN										
Wet gluten (14% mb), %	32.7	28.6	27.0	33.4	35.7	34.7	28.8	25.7	27.1	29.4
Dry gluten (14% mb), %	11.1	9.8	9.0	11.5	12.2	11.7	9.7	8.6	9.1	9.7
Gluten Index	95	96	96	95	91	93	97	96	96	97
FARINOGRAM										
Water absorption (14% mb), %	59.8	57.1	56.7	59.2	60.9	61.0	58.3	58.5	58.1	58.4
Development time, min	5.0	4.8	5.0	4.5	6.3	5.5	4.7	5.0	4.5	5.2
Stability, min	8.5	8.0	7.7	9.4	10.0	9.6	8.1	6.8	7.1	7.2
Mixing tolerance index, BU	39	36	39	28	31	28	34	42	37	43
EXTENSOGRAM (45 min pull)										
Area, cm²	130	129	104	127	127	138	111	93	101	110
Maximum height, BU	403	422	384	402	383	392	365	338	348	371
Extensibility, mm	232	219	196	228	237	250	221	195	208	216
ALVEOGRAM										
Strength (S), cm²	47.2	38.3	37.1	44.5	45.5	45.1	39.2	35.9	39.6	41.3
Stability (P), mm	71	62	65	72	76	75	71	74	66	69
Distensibility (L), mm	200	174	152	155	166	161	151	131	168	172
Configuration ratio (P/L)	0.35	0.36	0.43	0.46	0.46	0.47	0.47	0.56	0.39	0.40
MIXOGRAM										
Peak time, min	2.4	2.8	3.0	2.6	2.5	2.4	2.6	2.6	2.6	2.5
100 g BAKING TEST										
Loaf volume, cm³	1198	1082	1043	1164	1217	1194	1140	1055	1185	1123
Evaluation (see page 79)	0	0	0	0	0	0	0	0	0	0

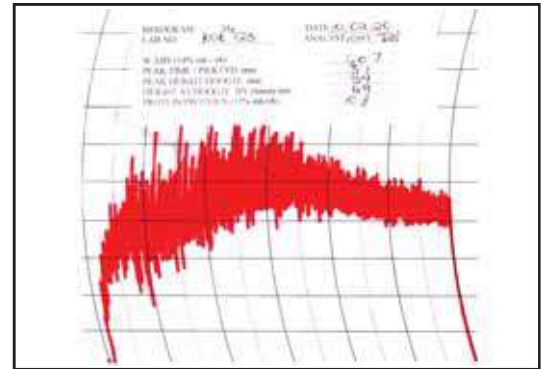
# RHEOLOGICAL GRAPHS PER PRODUCTION REGION

## MIXOGRAM

3

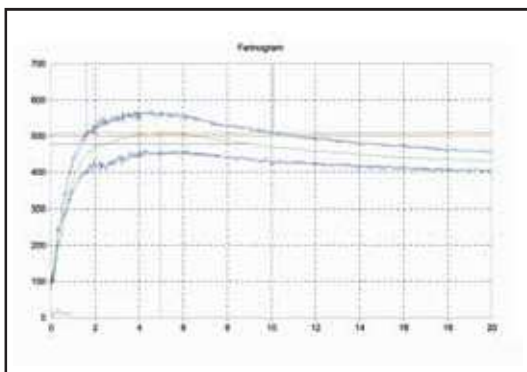


4

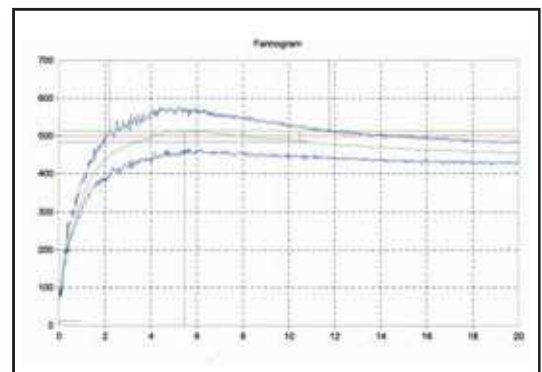


## FARINOGRAM

3

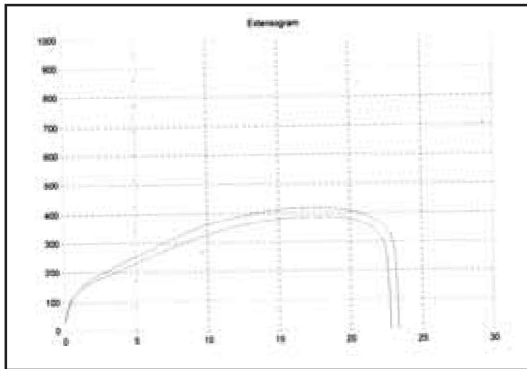


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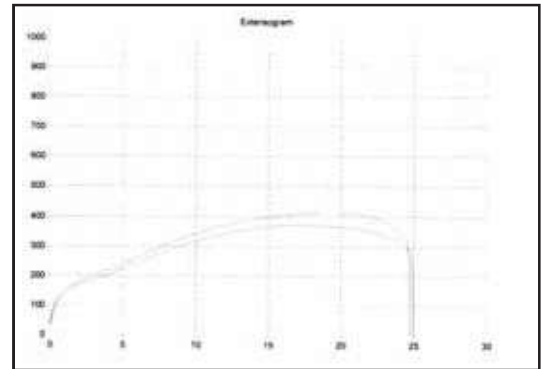


## EXTENSOGRAM

3

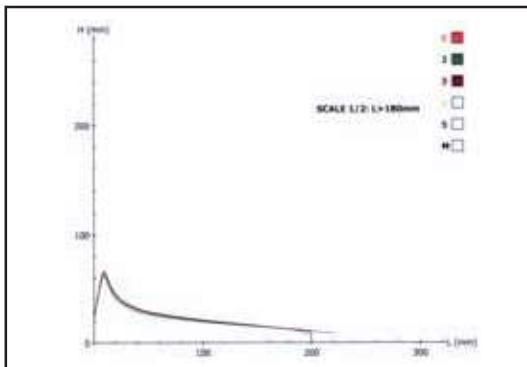


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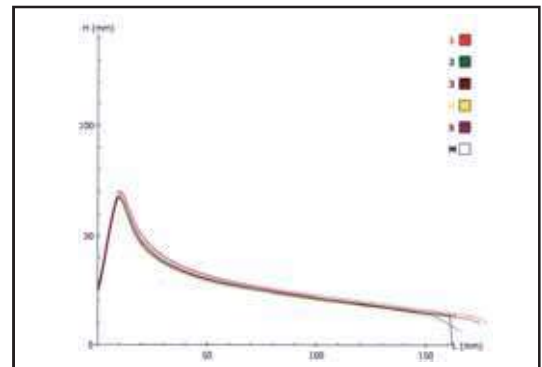


## ALVEOGRAM

3



4



# South African Quality data per production region

## WINTER RAINFALL WHEAT

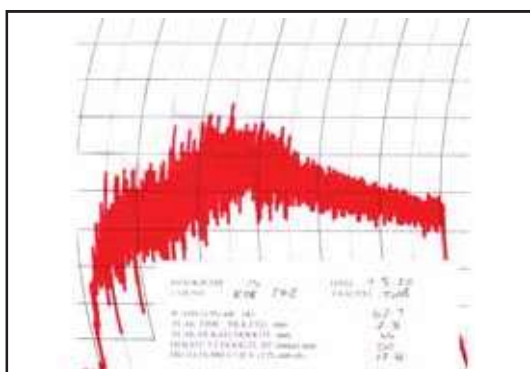
PRODUCTION REGION	(5) Rûens Western Region				(6) Rûens Eastern Region					
WHEAT	ave	min	max	stdev	ave	min	max	stdev		
Protein (12% mb), %	12.8	9.7	14.1	1.00	13.0	11.1	14.3	0.76		
Falling number, sec	342	289	440	45.61	389	334	447	29.13		
Moisture, %`	10.9	9.7	11.8	0.66	10.6	9.7	12.1	0.53		
1000 Kernel mass (13% mb), g	36.4	26.8	39.6	2.96	36.3	30.9	41.8	2.38		
Hectolitre mass (dirty), kg/hl	79.5	76.5	82.5	1.31	78.3	72.9	81.6	1.92		
Screenings (<1.8 mm sieve), %	1.35	0.27	3.60	1.04	1.83	0.23	4.42	0.86		
Total damaged kernels, %	0.59	0.12	1.24	0.36	0.51	0.16	2.36	0.44		
Combined deviations, %	2.58	1.07	5.54	1.40	2.81	0.85	7.24	1.23		
Number of samples	17				26					
CULTIVARS										
	SST 0117 26.9				SST 087 23.3					
cultivars	SST 0166 25.3				SST 0117 20.4					
with highest %	SST 087 13.6				SST 0127 17.0					
occurrence	SST 0147 12.3				SST 88 14.0					
	SST 88 12.1				SST 0166 13.4					
Number of samples	17				26					
MIXOGRAM (Quadromat Junior)	ave	min	max	stdev	ave	min	max	stdev		
Peak time, min	2.8	2.5	3.1	0.19	2.7	2.4	3.2	0.17		
Tail height (6 min), mm	50	44	53	1.90	50	44	55	2.36		
Number of samples	17				26					
	COMPOSITE SAMPLES									
CLASS AND GRADE	Super	B1	B2	B3	COW	Super	B1	B2	B3	COW
Bühler Extraction, %	75.5	75.2	-	-	74.2	74.1	74.3	-	-	72.5
FLOUR										
Protein (12% mb), %	12.3	11.2	-	-	12.4	12.4	11.2	-	-	12.2
Moisture, %	13.6	14.4	-	-	14.1	14.0	13.9	-	-	13.5
Ash (db), %	0.65	0.62	-	-	0.63	0.65	0.61	-	-	0.64
Colour, KJ (wet)	-4.5	-4.8	-	-	-4.7	-4.5	-4.8	-	-	-4.5
Colour, Konica Minolta CM5 (dry)										
L*	93.59	93.73	-	-	93.65	93.71	93.79	-	-	93.78
a*	0.58	0.43	-	-	0.45	0.49	0.50	-	-	0.39
b*	9.97	10.36	-	-	10.44	10.62	10.59	-	-	11.67
RVA										
Peak Viscosity, cP	2188	2092	-	-	2138	2216	2231	-	-	2017
Minimum viscosity (Trough), cP	1682	1639	-	-	1818	1598	1619	-	-	1429
Final Viscosity, cP	2420	2318	-	-	2319	2583	2693	-	-	2334
Peak Time, min	7.00	7.00	-	-	6.33	7.00	7.00	-	-	7.00
GLUTEN										
Wet gluten (14% mb), %	31.5	28.4	-	-	32.0	33.5	29.6	-	-	32.8
Dry gluten (14% mb), %	10.8	9.7	-	-	10.7	11.6	9.9	-	-	11.2
Gluten Index	96	95	-	-	98	94	96	-	-	94
FARINOGRAM										
Water absorption (14% mb), %	60.7	59.8	-	-	60.7	61.5	60.4	-	-	61.6
Development time, min	4.8	4.8	-	-	5.7	4.5	4.5	-	-	4.7
Stability, min	7.1	6.7	-	-	8.5	6.5	7.0	-	-	6.4
Mixing tolerance index, BU	41	41	-	-	37	45	38	-	-	44
EXTENSOGRAM (45 min pull)										
Area, cm²	107	102	-	-	111	98	86	-	-	94
Maximum height, BU	350	372	-	-	356	322	333	-	-	322
Extensibility, mm	215	198	-	-	220	215	186	-	-	205
ALVEOGRAM										
Strength (S), cm²	40.2	39.3	-	-	44.4	42.9	37.0	-	-	43.9
Stability (P), mm	76	80	-	-	76	83	83	-	-	86
Distensibility (L), mm	140	128	-	-	167	149	117	-	-	149
Configuration ratio (P/L)	0.54	0.63	-	-	0.46	0.56	0.71	-	-	0.58
MIXOGRAM										
Peak time, min	2.5	2.4	-	-	2.4	2.0	2.4	-	-	2.1
100 g BAKING TEST										
Loaf volume, cm³	1109	1054	-	-	1143	1137	1030	-	-	1085
Evaluation (see page 79)	0	0	-	-	0	0	0	-	-	0



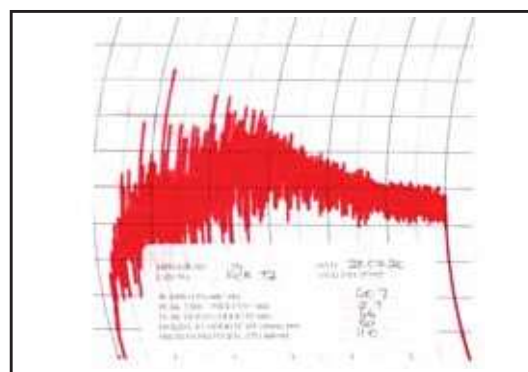
# RHEOLOGICAL GRAPHS PER PRODUCTION REGION

## MIXOGRAM

5

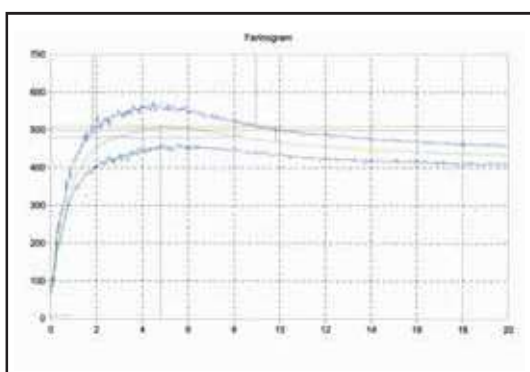


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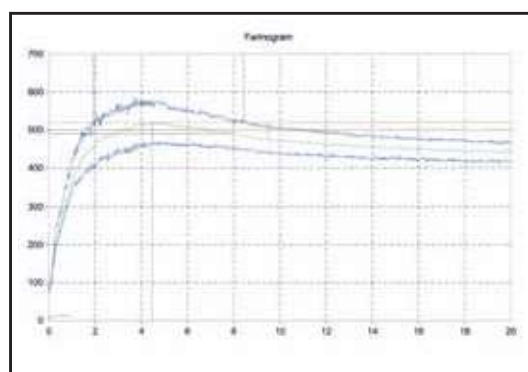


## FARINOGRAM

5

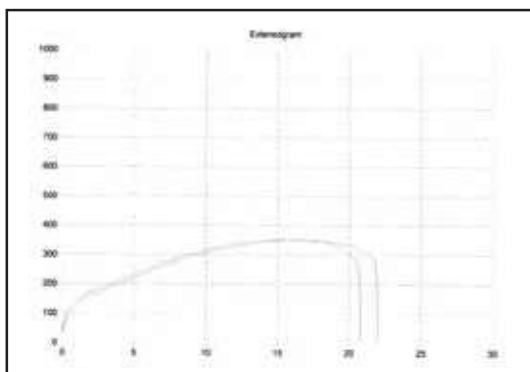


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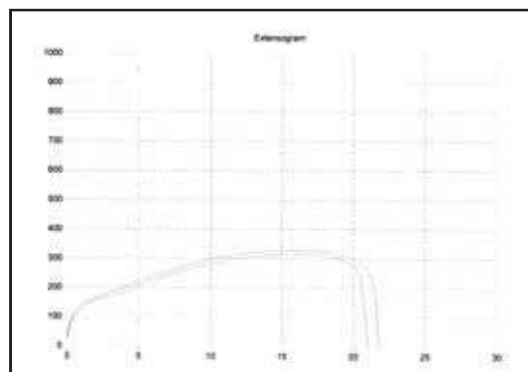


## EXTENSOGRAM

5

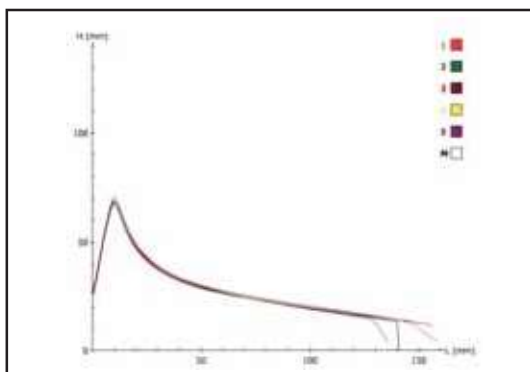


6

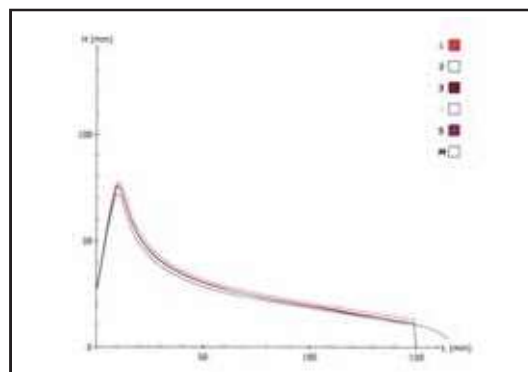


## ALVEOGRAM

5



6



# South African Quality data per production region

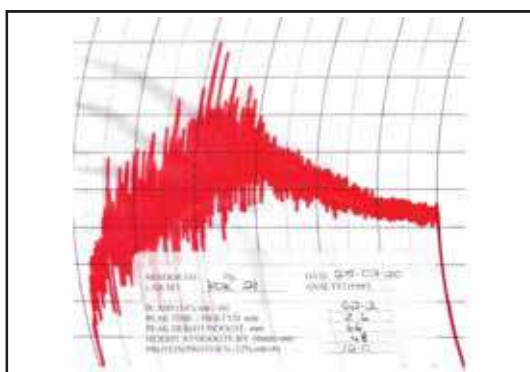
## IRRIGATION WHEAT

PRODUCTION REGION	(10) Griqualand West Region					(11) Vaalharts Region				
WHEAT	ave	min	max	stdev		ave	min	max	stdev	
Protein (12% mb), %	12.7	10.8	15.7	1.02		12.6	10.8	14.2	0.90	
Falling number, sec	356	225	440	38.90		421	264	584	90.97	
Moisture, %	9.4	8.2	10.5	0.63		9.8	8.3	10.3	0.45	
1000 Kernel mass (13% mb), g	41.2	36.6	45.4	2.20		38.6	34.5	42.1	2.33	
Hectolitre mass (dirty), kg/hl	82.8	79.8	85.3	1.67		82.0	75.0	84.5	2.78	
Screenings (<1.8 mm sieve), %	0.67	0.05	2.45	0.60		1.29	0.31	3.15	0.89	
Total damaged kernels, %	0.29	0.08	0.48	0.10		0.42	0.00	1.50	0.43	
Combined deviations, %	1.22	0.59	3.05	0.62		2.22	0.51	5.41	1.24	
Number of samples	25					16				
CULTIVARS										
	SST 8135 24.4					SST 8156 29.1				
cultivars	SST 8154 22.9					PAN 3497 23.2				
with highest %	SST 8156 18.0					SST 884 20.8				
occurrence	PAN 3400 13.2					SST 806 9.2				
	PAN 3497 6.4					SST 8154 6.6				
Number of samples	25					16				
MIXOGRAM (Quadromat Junior)										
	ave	min	max	stdev		ave	min	max	stdev	
Peak time, min	2.5	2.1	2.9	0.23		2.8	2.4	3.3	0.24	
Tail height (6 min), mm	47	42	51	2.55		47	45	51	1.86	
Number of samples	25					16				
	COMPOSITE SAMPLES									
CLASS AND GRADE	Super	B1	B2	B3	COW	Super	B1	B2	B3	COW
Bühler Extraction, %	75.1	76.7	77.4	-	-	76.5	77.2	76.5	-	-
FLOUR										
Protein (12% mb), %	12.5	11.2	10.1	-	-	12.4	11.3	10.3	-	-
Moisture, %	13.7	14.1	13.9	-	-	14.0	13.7	13.5	-	-
Ash (db), %	0.62	0.64	0.62	-	-	0.65	0.64	0.65	-	-
Colour, KJ (wet)	-5.0	-5.0	-5.0	-	-	-5.0	-5.0	-5.0	-	-
Colour, Konica Minolta CM5 (dry)										
L*	93.73	93.72	93.85	-	-	93.84	93.85	93.87	-	-
a*	0.52	0.56	0.57	-	-	0.49	0.46	0.48	-	-
b*	10.28	10.87	11.47	-	-	10.43	10.38	10.89	-	-
RVA										
Peak Viscosity, cP	2045	1979	1921	-	-	2167	2313	2098	-	-
Minimum viscosity (Trough), cP	1586	1536	1565	-	-	1659	1856	1705	-	-
Final Viscosity, cP	2241	2207	2193	-	-	2344	2512	2393	-	-
Peak Time, min	7.00	7.00	7.00	-	-	7.00	7.00	7.00	-	-
GLUTEN										
Wet gluten (14% mb), %	36.5	32.8	29.3	-	-	32.5	29.5	27.2	-	-
Dry gluten (14% mb), %	12.2	10.7	9.4	-	-	10.8	10.3	8.9	-	-
Gluten Index	81	79	90	-	-	97	97	96	-	-
FARINOGRAM										
Water absorption (14% mb), %	62.4	61.9	61.3	-	-	61.9	61.4	60.5	-	-
Development time, min	4.5	4.2	5.5	-	-	5.7	5.7	5.2	-	-
Stability, min	5.5	5.5	6.6	-	-	6.7	7.4	6.5	-	-
Mixing tolerance index, BU	55	48	52	-	-	46	44	48	-	-
EXTENSOGRAM (45 min pull)										
Area, cm²	84	87	86	-	-	113	112	95	-	-
Maximum height, BU	293	302	326	-	-	364	407	345	-	-
Extensibility, mm	202	202	192	-	-	225	199	199	-	-
ALVEOGRAM										
Strength (S), cm²	40.9	37.5	37.2	-	-	41.7	44.5	35.9	-	-
Stability (P), mm	76	80	86	-	-	79	88	86	-	-
Distensibility (L), mm	149	123	106	-	-	130	125	98	-	-
Configuration ratio (P/L)	0.51	0.65	0.81	-	-	0.61	0.70	0.88	-	-
MIXOGRAM										
Peak time, min	2.0	2.3	2.4	-	-	2.5	2.5	2.5	-	-
100 g BAKING TEST										
Loaf volume, cm³	1263	1131	1036	-	-	1226	1094	1036	-	-
Evaluation (see page 79)	0	0	0	-	-	0	0	0	-	-

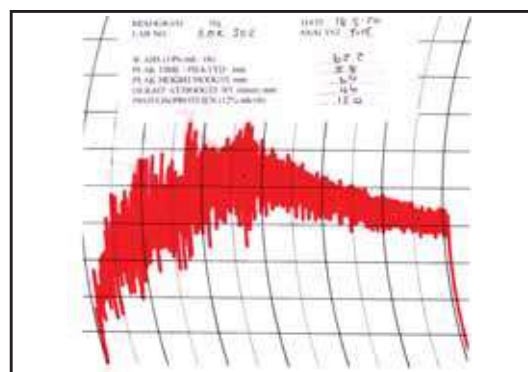
# RHEOLOGICAL GRAPHS PER PRODUCTION REGION

## MIXOGRAM

10

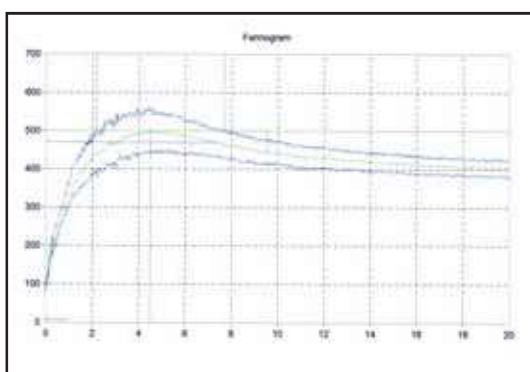


11

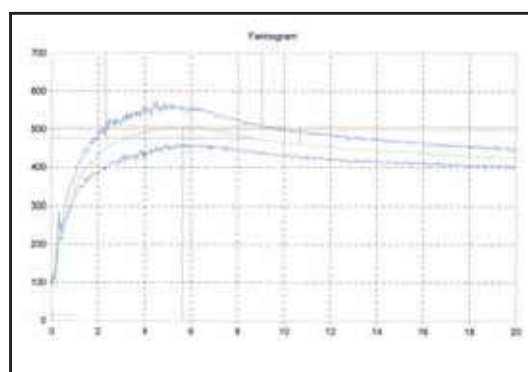


## FARINOGRAM

10

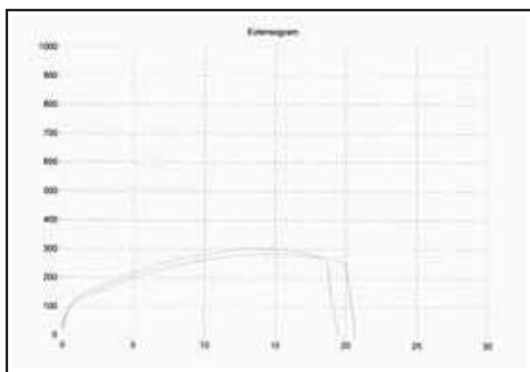


11

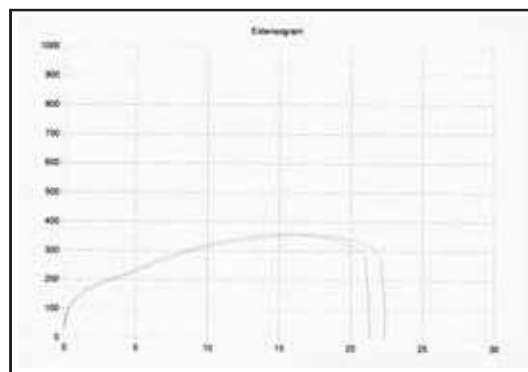


## EXTENSOGRAM

10

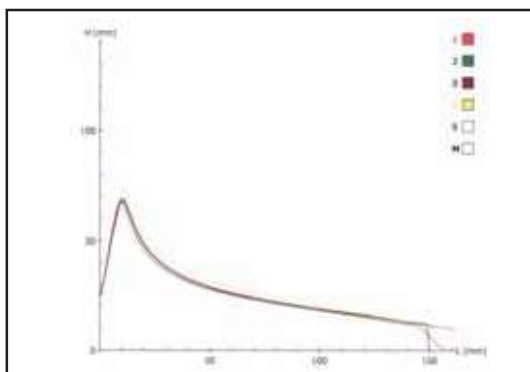


11

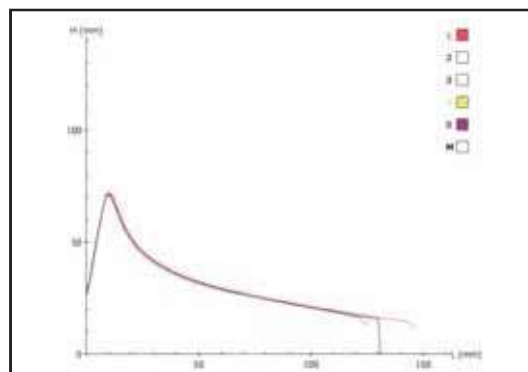


## ALVEOGRAM

10



11





# South African Quality data per production region

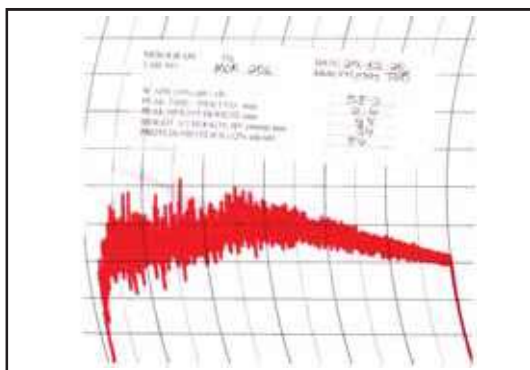
## IRRIGATION WHEAT

PRODUCTION REGION	(12) North West Western Region					(14) North West Southern Region				
WHEAT	ave	min	max	stdev		ave	min	max	stdev	
Protein (12% mb), %	12.2	10.3	14.7	2.26		14.2	13.8	14.5	0.29	
Falling number, sec	268	47	388	191.36		240	104	355	116.54	
Moisture, %`	9.4	8.2	10.5	1.16		10.1	9.3	10.4	0.54	
1000 Kernel mass (13% mb), g	40.6	38.7	42.2	1.77		34.0	31.9	36.0	1.85	
Hectolitre mass (dirty), kg/hl	80.4	73.1	85.4	6.45		80.1	78.2	83.6	2.42	
Screenings (<1.8 mm sieve), %	0.97	0.42	1.34	0.48		0.93	0.45	1.46	0.54	
Total damaged kernels, %	7.04	0.54	15.04	7.37		2.92	0.48	8.60	3.84	
Combined deviations, %	8.15	1.08	16.60	7.85		4.05	1.49	9.05	3.47	
Number of samples	3					4				
CULTIVARS										
	SST 8135 52.7					SST 843 76.2				
cultivars	SST 884 17.0					SST 884 13.0				
with highest %	SST 8156 16.3					SST 875 6.0				
occurrence	SST 8154 7.7					SST 895 4.8				
	PAN 3400 6.3									
Number of samples	3					4				
MIXOGRAM (Quadromat Junior)	ave	min	max	stdev		ave	min	max	stdev	
Peak time, min	2.6	1.8	3.3	0.75		4.4	3.5	6.3	1.27	
Tail height (6 min), mm	42	34	49	7.64		56	52	62	4.24	
Number of samples	3					4				
	COMPOSITE SAMPLES									
CLASS AND GRADE	Super	B1	B2	B3	COW	Super	B1	B2	B3	COW
Bühler Extraction, %	76.1	-	-	-	74.1	73.5	-	-	-	71.8
FLOUR										
Protein (12% mb), %	13.9	-	-	-	10.3	13.3	-	-	-	13.2
Moisture, %	13.6	-	-	-	13.6	14.4	-	-	-	14.2
Ash (db), %	0.69	-	-	-	0.54	0.60	-	-	-	0.60
Colour, KJ (wet)	-4.9	-	-	-	-4.7	-5.0	-	-	-	-4.8
Colour, Konica Minolta CM5 (dry)										
L*	93.57	-	-	-	94.05	93.92	-	-	-	93.98
a*	0.49	-	-	-	0.32	0.48	-	-	-	0.40
b*	9.75	-	-	-	9.68	9.46	-	-	-	8.70
RVA										
Peak Viscosity, cP	2390	-	-	-	200	1838	-	-	-	559
Minimum viscosity (Trough), cP	1799	-	-	-	21	1601	-	-	-	237
Final Viscosity, cP	2457	-	-	-	29	1952	-	-	-	426
Peak Time, min	7.00	-	-	-	3.40	6.93	-	-	-	4.67
GLUTEN										
Wet gluten (14% mb), %	-	-	-	-	26.8	32.5	-	-	-	30.3
Dry gluten (14% mb), %	-	-	-	-	9.1	11.4	-	-	-	11.1
Gluten Index	-	-	-	-	99	99	-	-	-	99
FARINOGRAM										
Water absorption (14% mb), %	67.5	-	-	-	55.6	61.4	-	-	-	59.0
Development time, min	4.3	-	-	-	2.4	9.0	-	-	-	6.7
Stability, min	3.5	-	-	-	4.2	15.2	-	-	-	17.2
Mixing tolerance index, BU	57	-	-	-	83	22	-	-	-	18
EXTENSOGRAM (45 min pull)										
Area, cm²	69	-	-	-	105	187	-	-	-	163
Maximum height, BU	242	-	-	-	343	552	-	-	-	525
Extensibility, mm	193	-	-	-	225	249	-	-	-	234
ALVEOGRAM										
Strength (S), cm²	39.0	-	-	-	27.3	62.6	-	-	-	66.1
Stability (P), mm	98	-	-	-	42	90	-	-	-	87
Distensibility (L), mm	107	-	-	-	213	144	-	-	-	140
Configuration ratio (P/L)	0.92	-	-	-	0.20	0.63	-	-	-	0.62
MIXOGRAM										
Peak time, min	1.4	-	-	-	2.6	3.5	-	-	-	4.5
100 g BAKING TEST										
Loaf volume, cm³	1298	-	-	-	1041	1258	-	-	-	1230
Evaluation (see page 79)	0	-	-	-	0	0	-	-	-	0

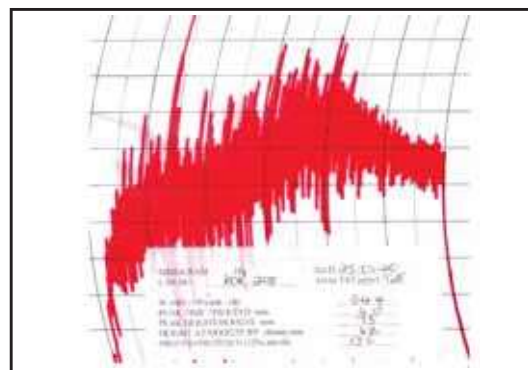
# RHEOLOGICAL GRAPHS PER PRODUCTION REGION

## MIXOGRAM

12

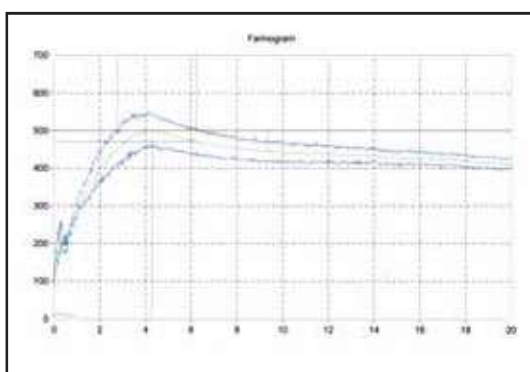


14

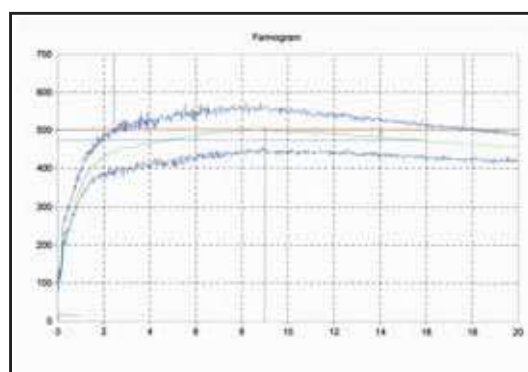


## FARINOGRAM

12

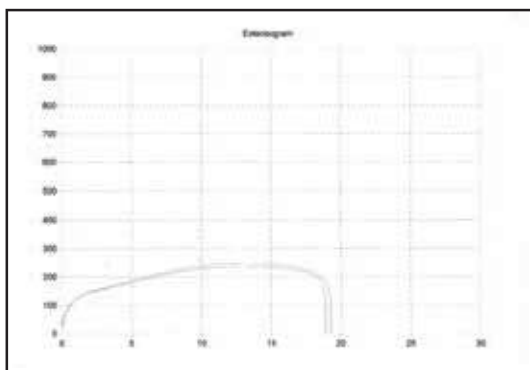


14

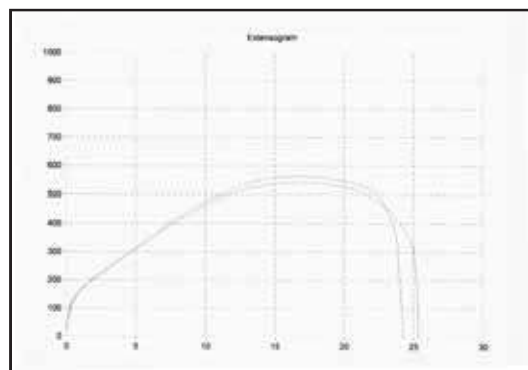


## EXTENSOGRAM

12

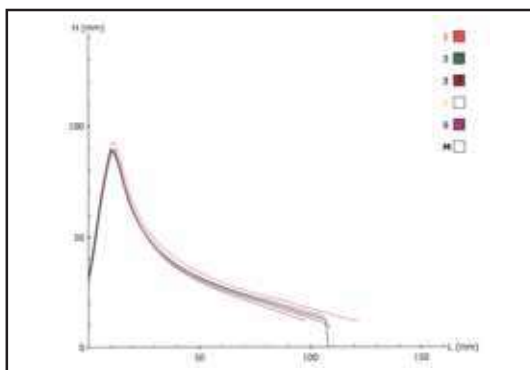


14

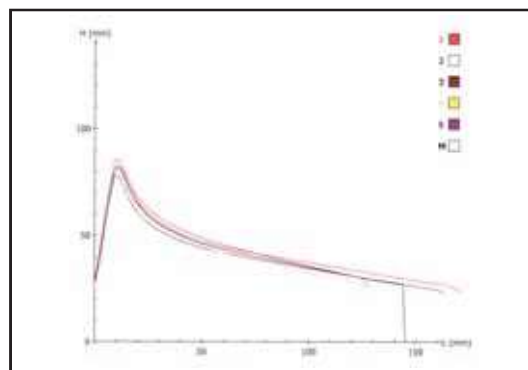


## ALVEOGRAM

12



14



# South African Quality data per production region

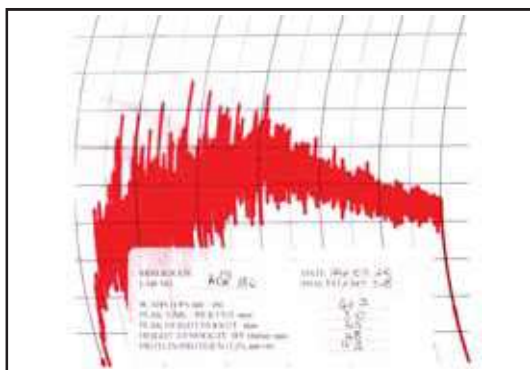
## IRRIGATION WHEAT

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), %	13.2	11.4	15.6	1.31		12.6	10.9	14.2	1.36	
Falling number, sec	401	320	529	60.33		284	89	399	142.89	
Moisture, %	9.7	8.5	10.8	0.85		10.8	10.6	11.0	0.21	
1000 Kernel mass (13% mb), g	35.7	28.7	38.7	3.19		36.8	31.9	41.7	4.28	
Hectolitre mass (dirty), kg/hl	78.3	75.5	80.1	1.49		77.5	70.5	81.5	4.84	
Screenings (<1.8 mm sieve), %	1.38	0.49	2.36	0.57		2.91	0.96	7.21	2.92	
Total damaged kernels, %	0.35	0.00	1.02	0.29		3.52	0.08	10.60	4.80	
Combined deviations, %	2.11	0.57	3.76	0.87		7.03	1.70	11.90	4.95	
Number of samples	9					4				
CULTIVARS										
	PAN 3368 21.6					PAN 3368 21.3				
cultivars	PAN 3400 19.1					SST 8156 17.5				
with highest %	SST 8135 12.6					SST 8154 16.0				
occurrence	MATLABAS 11.1					PAN 3497 12.5				
	SST 398 10.6					SST 884 12.0				
Number of samples	9					4				
MIXOGRAM (Quadromat Junior)										
	ave	min	max	stdev		ave	min	max	stdev	
Peak time, min	3.0	2.5	3.6	0.38		3.0	2.4	3.8	0.58	
Tail height (6 min), mm	49	47	52	1.45		48	44	52	3.42	
Number of samples	9					4				
	COMPOSITE SAMPLES									
CLASS AND GRADE	Super	B1	B2	B3	COW	Super	B1	B2	B3	COW
Bühler Extraction, %	72.4	73.6	75.2	-	-	-	-	78.5	-	73.9
FLOUR										
Protein (12% mb), %	12.4	10.8	10.2	-	-	-	-	10.1	-	12.1
Moisture, %	14.0	14.3	13.7	-	-	-	-	13.6	-	13.6
Ash (db), %	0.62	0.71	0.60	-	-	-	-	0.64	-	0.61
Colour, KJ (wet)	-4.7	-4.8	-4.9	-	-	-	-	-5.0	-	-4.2
Colour, Konica Minolta CM5 (dry)										
L*	93.60	93.61	93.80	-	-	-	-	93.90	-	93.41
a*	0.44	0.46	0.50	-	-	-	-	0.40	-	0.39
b*	10.97	9.87	10.18	-	-	-	-	11.09	-	10.37
RVA										
Peak Viscosity, cP	1729	2395	2305	-	-	-	-	2365	-	637
Minimum viscosity (Trough), cP	1528	1640	1815	-	-	-	-	1801	-	366
Final Viscosity, cP	1909	2636	2575	-	-	-	-	2677	-	630
Peak Time, min	6.87	7.00	7.00	-	-	-	-	7.00	-	5.13
GLUTEN										
Wet gluten (14% mb), %	33.1	28.4	25.2	-	-	-	-	23.7	-	32.5
Dry gluten (14% mb), %	11.5	9.3	8.3	-	-	-	-	8.2	-	10.8
Gluten Index	97	97	98	-	-	-	-	99	-	97
FARINOGRAM										
Water absorption (14% mb), %	61.4	60.6	59.4	-	-	-	-	58.0	-	60.3
Development time, min	5.3	5.7	6.5	-	-	-	-	5.4	-	4.5
Stability, min	7.3	8.8	11.5	-	-	-	-	8.5	-	5.5
Mixing tolerance index, BU	40	34	23	-	-	-	-	38	-	62
EXTENSOGRAM (45 min pull)										
Area, cm²	108	107	114	-	-	-	-	106	-	91
Maximum height, BU	386	434	507	-	-	-	-	375	-	292
Extensibility, mm	204	179	167	-	-	-	-	205	-	223
ALVEOGRAM										
Strength (S), cm²	45.4	38.4	42.2	-	-	-	-	33.8	-	35.4
Stability (P), mm	85	97	110	-	-	-	-	73	-	59
Distensibility (L), mm	136	90	81	-	-	-	-	103	-	188
Configuration ratio (P/L)	0.63	1.08	1.36	-	-	-	-	0.71	-	0.31
MIXOGRAM										
Peak time, min	2.4	3.0	3.4	-	-	-	-	2.9	-	2.3
100 g BAKING TEST										
Loaf volume, cm³	1163	1036	961	-	-	-	-	1114	-	1287
Evaluation (see page 79)	0	0	0	-	-	-	-	0	-	0

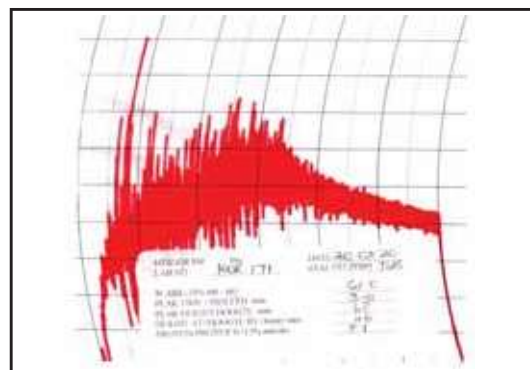
# RHEOLOGICAL GRAPHS PER PRODUCTION REGION

## MIXOGRAM

15

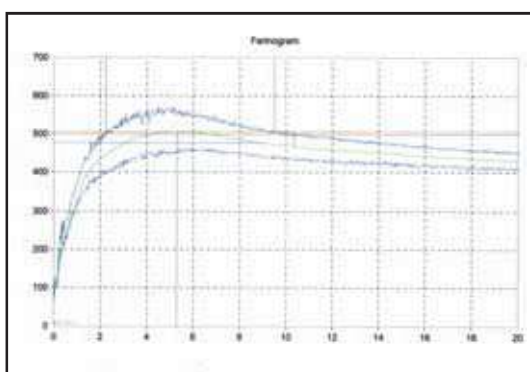


16

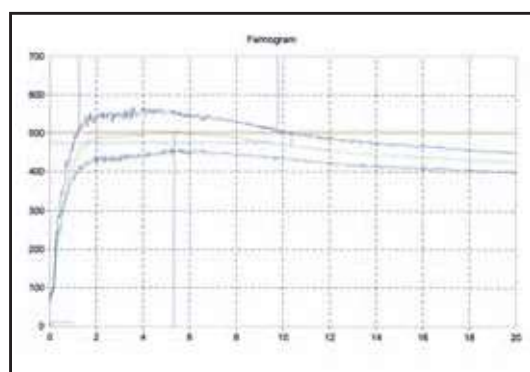


## FARINOGRAM

15

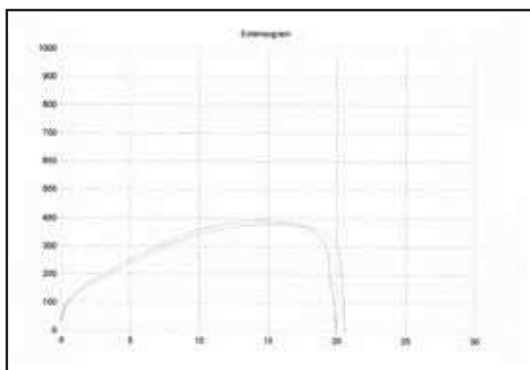


16

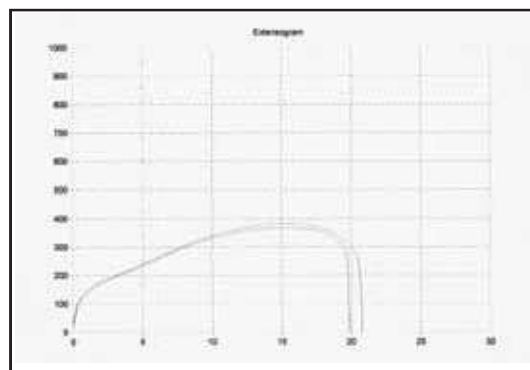


## EXTENSOGRAM

15

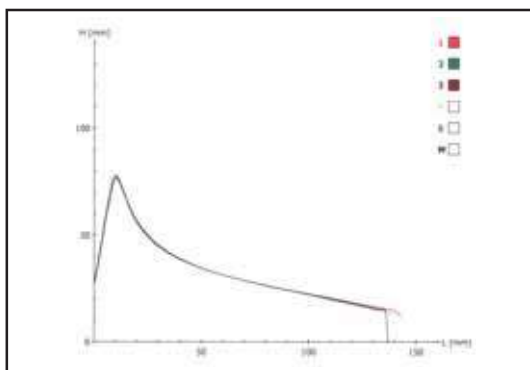


16

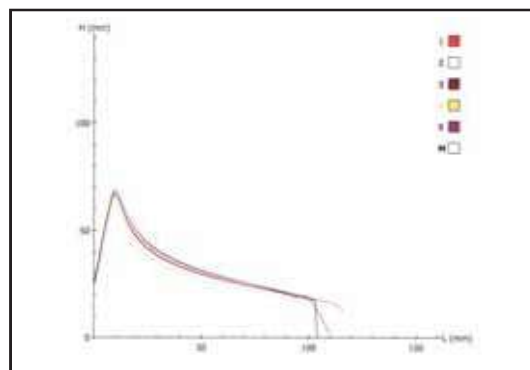


## ALVEOGRAM

15



16





# South African Quality data per production region

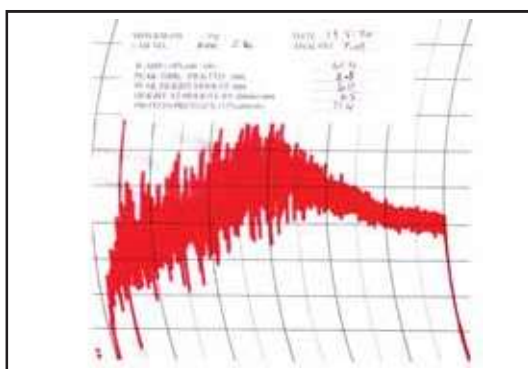
## IRRIGATION WHEAT

PRODUCTION REGION	(17) North West Central-Northern Region (Ottosdal)					(18) North West Central Region (Ventersdorp)				
WHEAT	ave	min	max	stdev		ave	min	max	stdev	
Protein (12% mb), %	13.0	11.7	14.3	1.07		12.2	-	-	-	
Falling number, sec	306	47	423	152.27		436	-	-	-	
Moisture, %	10.0	9.6	10.3	0.27		9.9	-	-	-	
1000 Kernel mass (13% mb), g	35.4	29.2	43.1	5.72		37.5	-	-	-	
Hectolitre mass (dirty), kg/hl	77.0	58.8	83.6	10.27		82.6	-	-	-	
Screenings (<1.8 mm sieve), %	2.80	0.43	11.38	4.80		1.75	-	-	-	
Total damaged kernels, %	2.68	0.24	12.44	5.45		0.46	-	-	-	
Combined deviations, %	5.82	0.75	24.86	10.65		2.45	-	-	-	
Number of samples	5					1				
CULTIVARS										
	SST 884 41.0					SST 884 100.0				
cultivars	SST 8156 15.6					- -				
with highest %	PAN 3400 12.4					- -				
occurrence	PAN 3497 10.6					- -				
	SST 8135 5.4					- -				
Number of samples	5					1				
MIXOGRAM (Quadromat Junior)										
	ave	min	max	stdev		ave	min	max	stdev	
Peak time, min	2.9	2.5	3.5	0.41		2.9	-	-	-	
Tail height (6 min), mm	45	31	52	8.20		46	-	-	-	
Number of samples	5					1				
	COMPOSITE SAMPLES									
CLASS AND GRADE	Super	B1	B2	B3	COW	Super	B1	B2	B3	COW
Bühler Extraction, %	74.7	76.8	-	-	-	74.6	-	-	-	-
FLOUR										
Protein (12% mb), %	13.1	11.5	-	-	-	11.3	-	-	-	-
Moisture, %	14.4	14.2	-	-	-	13.6	-	-	-	-
Ash (db), %	0.67	0.63	-	-	-	0.70	-	-	-	-
Colour, KJ (wet)	-4.9	-5.0	-	-	-	-4.7	-	-	-	-
Colour, Konica Minolta CM5 (dry)										
L*	93.70	94.10	-	-	-	93.52	-	-	-	-
a*	0.52	0.48	-	-	-	0.44	-	-	-	-
b*	9.89	9.40	-	-	-	9.80	-	-	-	-
RVA										
Peak Viscosity, cP	2388	2341	-	-	-	2396	-	-	-	-
Minimum viscosity (Trough), cP	1805	1820	-	-	-	1795	-	-	-	-
Final Viscosity, cP	2612	2610	-	-	-	2556	-	-	-	-
Peak Time, min	7.00	7.00	-	-	-	7.00	-	-	-	-
GLUTEN										
Wet gluten (14% mb), %	34.8	30.2	-	-	-	30.4	-	-	-	-
Dry gluten (14% mb), %	12.0	10.9	-	-	-	10.4	-	-	-	-
Gluten Index	99	98	-	-	-	96	-	-	-	-
FARINOGRAM										
Water absorption (14% mb), %	61.4	59.3	-	-	-	61.1	-	-	-	-
Development time, min	6.3	5.0	-	-	-	4.0	-	-	-	-
Stability, min	9.5	6.5	-	-	-	5.3	-	-	-	-
Mixing tolerance index, BU	33	50	-	-	-	55	-	-	-	-
EXTENSOGRAM (45 min pull)										
Area, cm²	137	109	-	-	-	99	-	-	-	-
Maximum height, BU	421	369	-	-	-	379	-	-	-	-
Extensibility, mm	235	214	-	-	-	188	-	-	-	-
ALVEOGRAM										
Strength (S), cm²	50.6	42.1	-	-	-	39.6	-	-	-	-
Stability (P), mm	83	72	-	-	-	93	-	-	-	-
Distensibility (L), mm	150	166	-	-	-	105	-	-	-	-
Configuration ratio (P/L)	0.55	0.43	-	-	-	0.89	-	-	-	-
MIXOGRAM										
Peak time, min	2.6	2.5	-	-	-	2.3	-	-	-	-
100 g BAKING TEST										
Loaf volume, cm³	1181	1119	-	-	-	1062	-	-	-	-
Evaluation (see page 79)	0	0	-	-	-	0	-	-	-	-

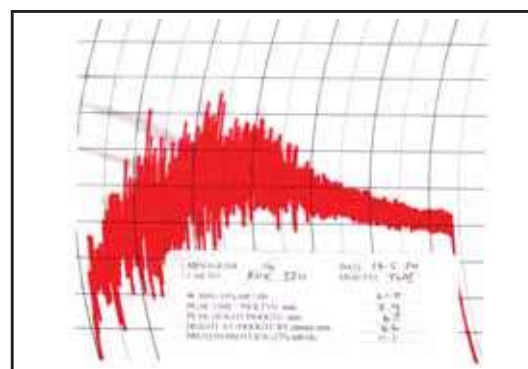
# RHEOLOGICAL GRAPHS PER PRODUCTION REGION

## MIXOGRAM

17

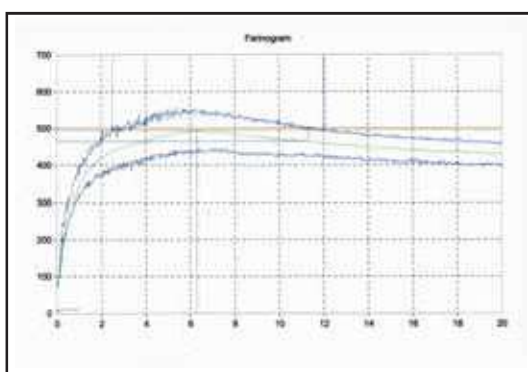


18

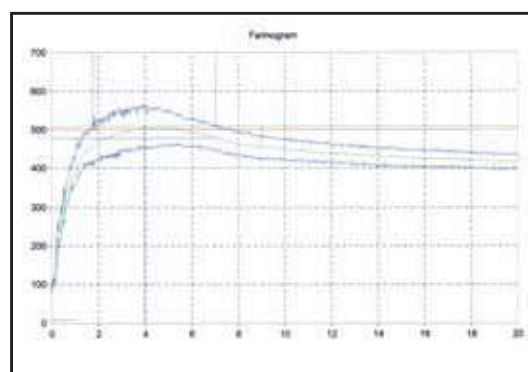


## FARINOGRAM

17

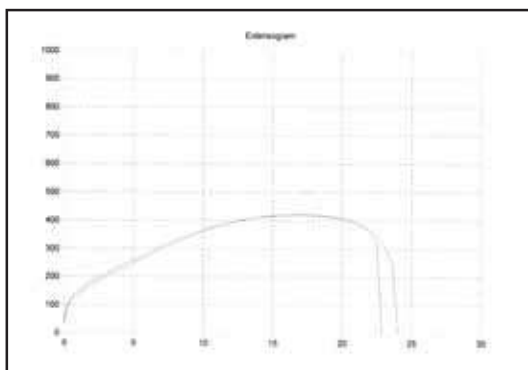


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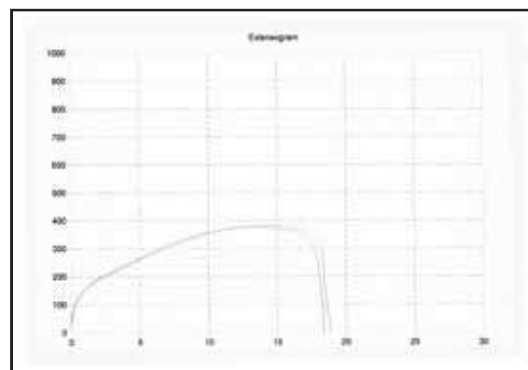


## EXTENSOGRAM

17

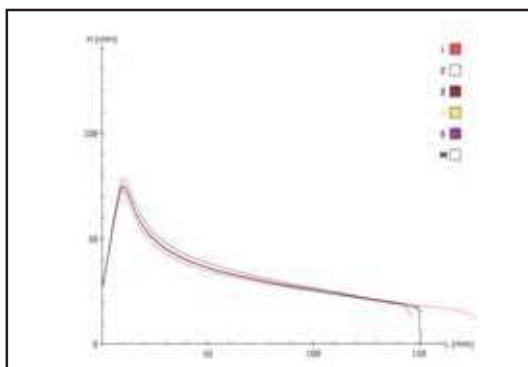


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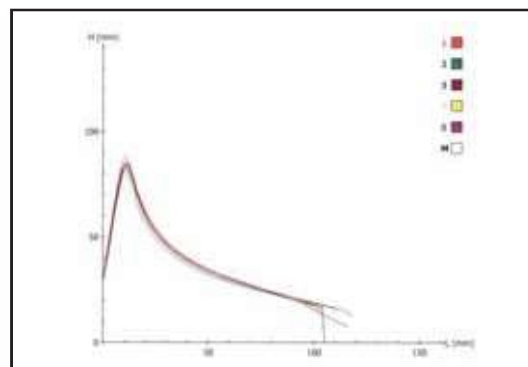


## ALVEOGRAM

17



18



# South African Quality data per production region

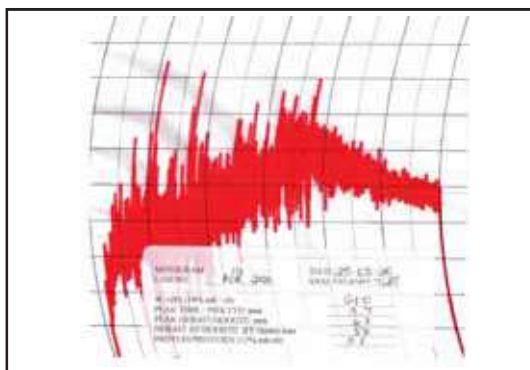
## IRRIGATION WHEAT

PRODUCTION REGION	(19) North West Central Region (Lichtenburg)					(20) North West Eastern Region				
WHEAT	ave	min	max	stdev		ave	min	max	stdev	
Protein (12% mb), %	13.6	9.5	17.6	1.85		12.2	11.0	13.9	0.82	
Falling number, sec	256	46	479	160.49		366	47	467	103.56	
Moisture, %	10.3	8.5	11.3	0.82		10.4	8.4	11.4	0.73	
1000 Kernel mass (13% mb), g	34.4	28.3	42.4	4.51		38.0	31.6	44.9	3.20	
Hectolitre mass (dirty), kg/hl	78.0	63.4	82.5	4.78		79.6	71.5	84.3	2.48	
Screenings (<1.8 mm sieve), %	2.05	0.15	4.46	1.64		1.79	0.89	3.16	0.66	
Total damaged kernels, %	5.88	0.00	40.30	10.90		3.09	0.00	69.66	12.53	
Combined deviations, %	8.50	0.47	44.23	11.35		5.34	1.46	72.34	12.61	
Number of samples	14					31				
CULTIVARS										
	SST 843 41.1					SST 8135 28.8				
cultivars	SST 884 23.9					SST 884 23.9				
with highest %	SST 8135 16.4					SST 8154 14.5				
occurrence	SST 875 5.3					SST 8156 9.1				
	SST 8156 4.4					DUZI 6.5				
Number of samples	14					31				
MIXOGRAM (Quadromat Junior)										
	ave	min	max	stdev		ave	min	max	stdev	
Peak time, min	3.9	2.5	5.7	1.07		3.1	2.1	4.2	0.42	
Tail height (6 min), mm	50	34	64	8.46		48	31	59	4.44	
Number of samples	14					31				
	COMPOSITE SAMPLES									
CLASS AND GRADE	Super	B1	B2	B3	COW	Super	B1	B2	B3	COW
Bühler Extraction, %	73.9	-	-	-	72.5	75.8	76.4	76.0	-	74.7
FLOUR										
Protein (12% mb), %	13.4	-	-	-	12.1	12.2	11.1	10.3	-	11.8
Moisture, %	14.0	-	-	-	13.6	14.1	13.8	13.8	-	13.6
Ash (db), %	0.61	-	-	-	0.61	0.61	0.62	0.62	-	0.63
Colour, KJ (wet)	-5.0	-	-	-	-4.4	-5.0	-5.0	-5.0	-	-4.4
Colour, Konica Minolta CM5 (dry)										
L*	93.98	-	-	-	93.78	93.66	93.82	93.84	-	93.45
a*	0.49	-	-	-	0.41	0.50	0.44	0.43	-	0.42
b*	9.21	-	-	-	9.43	10.20	10.06	9.86	-	9.85
RVA										
Peak Viscosity, cP	2259	-	-	-	324	2350	2336	2387	-	225
Minimum viscosity (Trough), cP	1647	-	-	-	49	1797	1804	1869	-	27
Final Viscosity, cP	2434	-	-	-	64	2622	2639	2683	-	36
Peak Time, min	7.00	-	-	-	3.53	7.00	7.00	7.00	-	3.47
GLUTEN										
Wet gluten (14% mb), %	34.1	-	-	-	32.2	31.6	29.1	27.1	-	31.3
Dry gluten (14% mb), %	11.9	-	-	-	10.7	10.9	9.8	9.2	-	10.6
Gluten Index	99	-	-	-	97	98	99	99	-	97
FARINOGRAM										
Water absorption (14% mb), %	61.3	-	-	-	57.3	60.0	59.5	59.1	-	57.4
Development time, min	9.3	-	-	-	4.3	6.5	5.3	5.5	-	2.8
Stability, min	17.0	-	-	-	8.4	10.0	7.6	7.0	-	4.4
Mixing tolerance index, BU	13	-	-	-	42	31	40	46	-	82
EXTENSOGRAM (45 min pull)										
Area, cm²	174	-	-	-	156	142	112	99	-	100
Maximum height, BU	535	-	-	-	465	460	383	372	-	314
Extensibility, mm	241	-	-	-	247	225	216	195	-	234
ALVEOGRAM										
Strength (S), cm²	62.8	-	-	-	45.4	48.9	39.6	36.1	-	29.6
Stability (P), mm	96	-	-	-	54	81	75	76	-	44
Distensibility (L), mm	128	-	-	-	228	142	134	117	-	214
Configuration ratio (P/L)	0.75	-	-	-	0.24	0.57	0.56	0.65	-	0.21
MIXOGRAM										
Peak time, min	3.6	-	-	-	3.1	2.9	2.9	2.9	-	2.5
100 g BAKING TEST										
Loaf volume, cm³	1204	-	-	-	1240	1124	1115	1032	-	1212
Evaluation (see page 79)	0	-	-	-	0	0	0	0	-	0

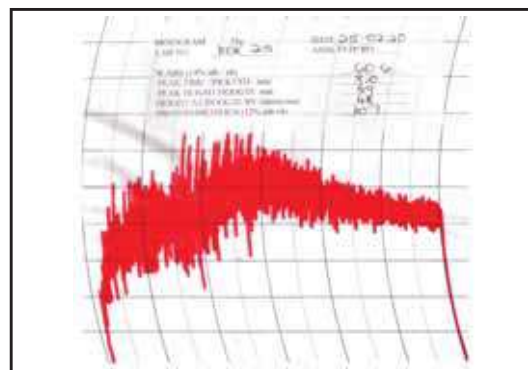
# RHEOLOGICAL GRAPHS PER PRODUCTION REGION

## MIXOGRAM

19

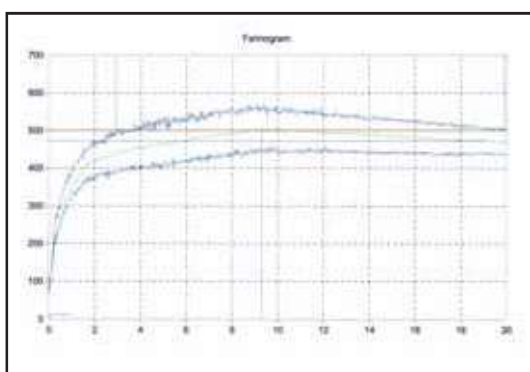


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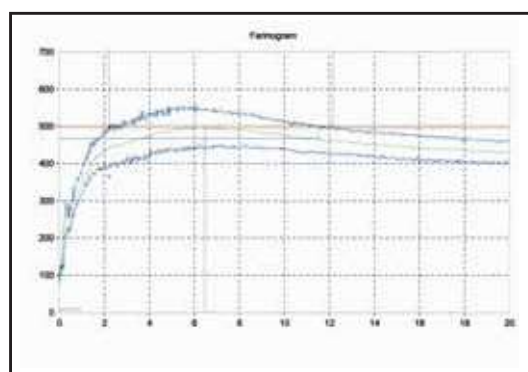


## FARINOGRAM

19

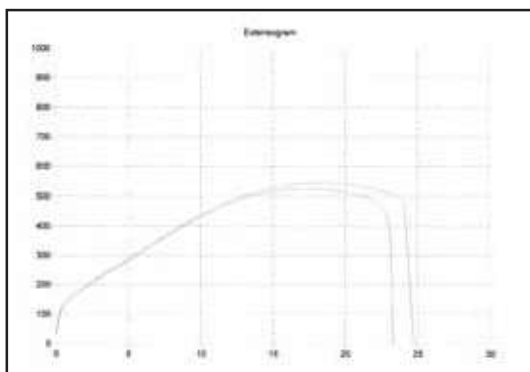


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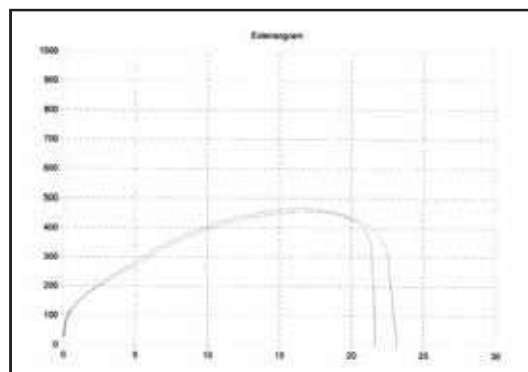


## EXTENSOGRAM

19

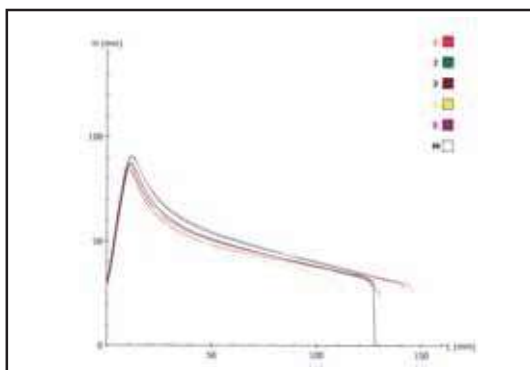


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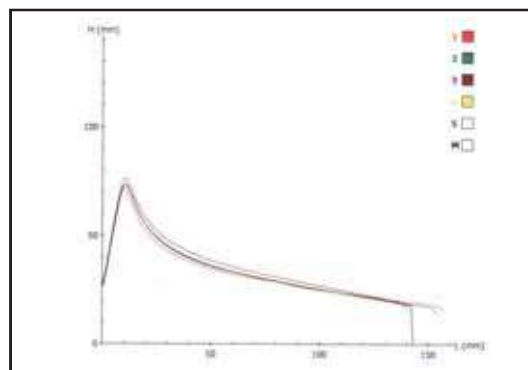


## ALVEOGRAM

19



20





# South African Quality data per production region

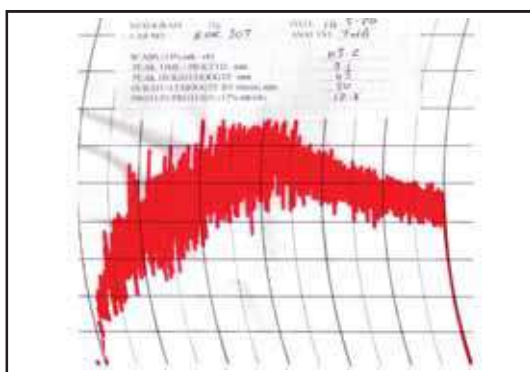
## SUMMER RAINFALL AND IRRIGATION WHEAT

PRODUCTION REGION	(22) Free State North-Western Region (Bothaville)					(23) Free State North-Western Region (Bultfontein)				
WHEAT	ave	min	max	stdev		ave	min	max	stdev	
Protein (12% mb), %	14.2	-	-	-		14.2	11.8	15.3	0.86	
Falling number, sec	397	-	-	-		358	145	536	87.54	
Moisture, %	9.7	-	-	-		10.0	9.5	10.4	0.26	
1000 Kernel mass (13% mb), g	33.6	-	-	-		29.5	25.3	32.8	1.71	
Hectolitre mass (dirty), kg/hl	80.4	-	-	-		76.9	70.6	79.7	2.54	
Screenings (<1.8 mm sieve), %	2.82	-	-	-		2.07	0.43	4.63	1.26	
Total damaged kernels, %	0.32	-	-	-		0.56	0.16	2.52	0.61	
Combined deviations, %	3.56	-	-	-		3.31	1.19	9.25	2.26	
Number of samples	1					17				
CULTIVARS										
	PAN 3497 100.0					PAN 3368 36.4				
cultivars	-					PAN 3111 16.2				
with highest %	-					SST 347 13.3				
occurrence	-					PAN 3161 11.0				
	-					SST 317 10.6				
Number of samples	1					17				
MIXOGRAM (Quadromat Junior)	ave	min	max	stdev		ave	min	max	stdev	
Peak time, min	3.3	-	-	-		3.1	2.3	5.2	0.67	
Tail height (6 min), mm	53	-	-	-		50	47	54	1.95	
Number of samples	1					17				
	COMPOSITE SAMPLES									
CLASS AND GRADE	Super	B1	B2	B3	COW	Super	B1	B2	B3	COW
Bühler Extraction, %	76.5	-	-	-	-	72.8	-	-	-	72.7
FLOUR										
Protein (12% mb), %	13.9	-	-	-	-	13.4	-	-	-	13.4
Moisture, %	14.0	-	-	-	-	13.9	-	-	-	13.4
Ash (db), %	0.64	-	-	-	-	0.57	-	-	-	0.63
Colour, KJ (wet)	-4.9	-	-	-	-	-4.5	-	-	-	-4.1
Colour, Konica Minolta CM5 (dry)										
L*	93.33	-	-	-	-	93.05	-	-	-	92.76
a*	0.54	-	-	-	-	0.50	-	-	-	0.55
b*	11.38	-	-	-	-	11.59	-	-	-	11.95
RVA										
Peak Viscosity, cP	1974	-	-	-	-	2118	-	-	-	1036
Minimum viscosity (Trough), cP	1575	-	-	-	-	1790	-	-	-	712
Final Viscosity, cP	2130	-	-	-	-	2454	-	-	-	1155
Peak Time, min	7.00	-	-	-	-	6.93	-	-	-	5.53
GLUTEN										
Wet gluten (14% mb), %	34.7	-	-	-	-	36.0	-	-	-	35.2
Dry gluten (14% mb), %	12.5	-	-	-	-	12.7	-	-	-	11.8
Gluten Index	98	-	-	-	-	95	-	-	-	96
FARINOGRAM										
Water absorption (14% mb), %	61.8	-	-	-	-	63.6	-	-	-	60.3
Development time, min	9.5	-	-	-	-	7.0	-	-	-	6.0
Stability, min	14.7	-	-	-	-	9.4	-	-	-	9.5
Mixing tolerance index, BU	22	-	-	-	-	31	-	-	-	30
EXTENSOGRAM (45 min pull)										
Area, cm²	167	-	-	-	-	105	-	-	-	120
Maximum height, BU	391	-	-	-	-	355	-	-	-	438
Extensibility, mm	300	-	-	-	-	213	-	-	-	201
ALVEOGRAM										
Strength (S), cm²	56.4	-	-	-	-	48.3	-	-	-	45.3
Stability (P), mm	75	-	-	-	-	96	-	-	-	85
Distensibility (L), mm	176	-	-	-	-	115	-	-	-	127
Configuration ratio (P/L)	0.43	-	-	-	-	0.83	-	-	-	0.67
MIXOGRAM										
Peak time, min	2.9	-	-	-	-	2.4	-	-	-	2.8
100 g BAKING TEST										
Loaf volume, cm³	1298	-	-	-	-	1140	-	-	-	1139
Evaluation (see page 79)	0	-	-	-	-	0	-	-	-	0

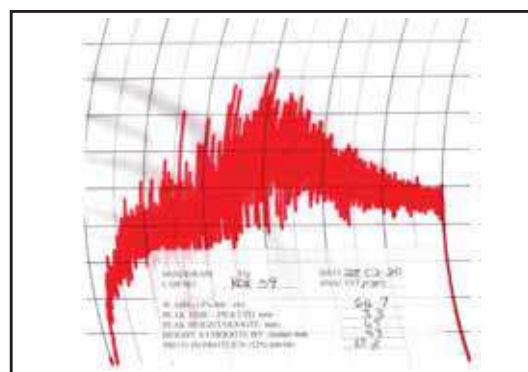
## RHEOLOGICAL GRAPHS PER PRODUCTION REGION

# MIXOGRAM

22

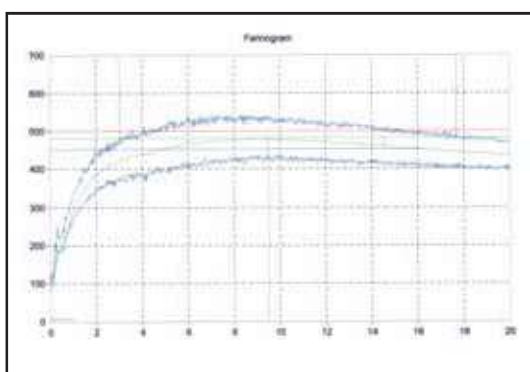


23

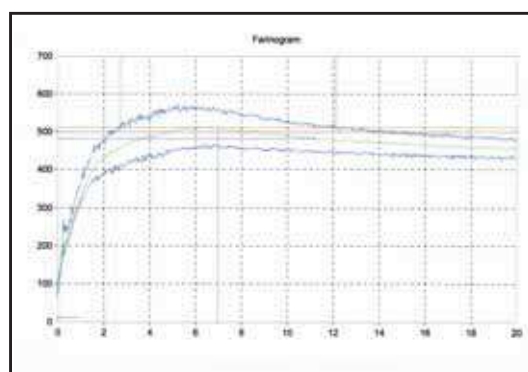


## FARINOGRAM

22

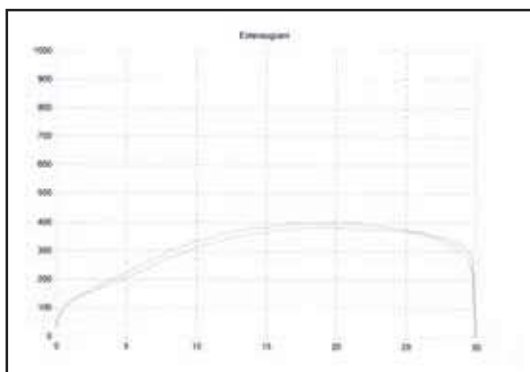


23

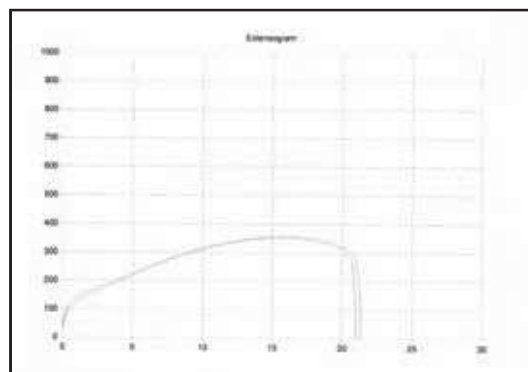


## EXTENSOGRAM

22

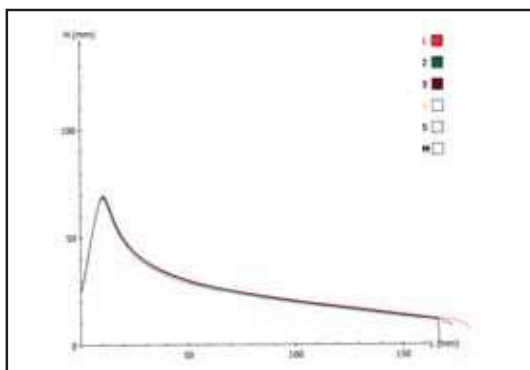


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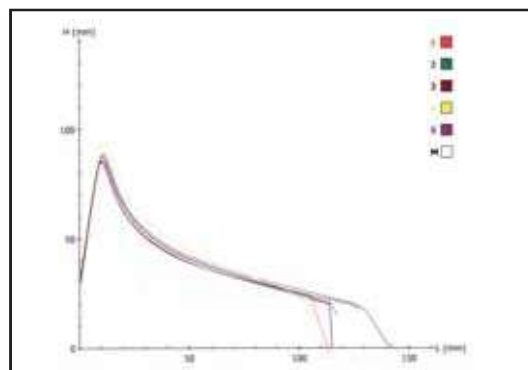


## ALVEOGRAM

22



23



# South African Quality data per production region

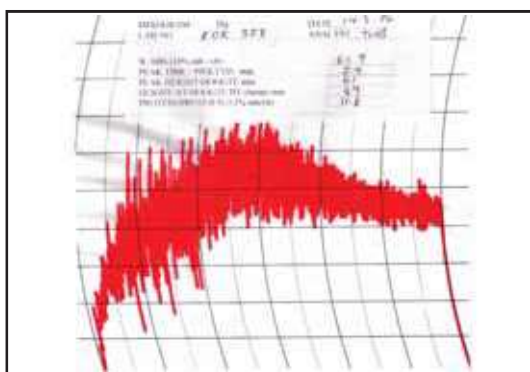
## SUMMER RAINFALL AND IRRIGATION WHEAT

PRODUCTION REGION	(24) Free State Central Region				(25) Free State South-Western Region					
WHEAT	ave	min	max	stdev	ave	min	max	stdev		
Protein (12% mb), %	12.6	11.1	13.7	1.07	15.0	13.7	15.9	0.93		
Falling number, sec	349	236	416	52.62	293	236	343	50.85		
Moisture, %	9.9	9.0	10.7	0.45	10.5	9.9	11.0	0.45		
1000 Kernel mass (13% mb), g	29.1	26.2	37.9	3.16	36.6	32.2	44.6	5.53		
Hectolitre mass (dirty), kg/hl	74.5	60.7	81.1	7.30	79.6	76.2	83.9	3.25		
Screenings (<1.8 mm sieve), %	4.69	0.83	11.87	3.79	2.09	0.64	4.81	1.86		
Total damaged kernels, %	0.50	0.18	1.00	0.25	1.43	0.06	2.76	1.41		
Combined deviations, %	6.97	1.41	16.11	5.11	3.87	0.70	8.13	3.20		
Number of samples	11				4					
CULTIVARS										
	PAN 3368		24.6		PAN 3161		33.8			
cultivars	PAN 3111		15.4		PAN 3368		14.8			
with highest %	PAN 3161		15.1		SST 8135		13.5			
occurrence	SST 398		11.2		SST 398		13.5			
	SST 8156		10.5		SST 8156		11.5			
Number of samples	11				4					
MIXOGRAM (Quadromat Junior)	ave	min	max	stdev	ave	min	max	stdev		
Peak time, min	3.1	2.1	4.3	0.59	3.1	2.3	4.3	0.84		
Tail height (6 min), mm	48	32	56	6.35	51	46	56	4.12		
Number of samples	11				4					
	COMPOSITE SAMPLES									
CLASS AND GRADE	Super	B1	B2	B3	COW	Super	B1	B2	B3	COW
Bühler Extraction, %	72.9	-	-	-	70.8	77.1	-	-	-	74.6
FLOUR										
Protein (12% mb), %	12.7	-	-	-	11.6	13.7	-	-	-	14.4
Moisture, %	13.6	-	-	-	13.6	13.8	-	-	-	13.7
Ash (db), %	0.56	-	-	-	0.64	0.68	-	-	-	0.71
Colour, KJ (wet)	-4.6	-	-	-	-4.4	-4.3	-	-	-	-2.6
Colour, Konica Minolta CM5 (dry)										
L*	92.89	-	-	-	93.12	93.07	-	-	-	92.14
a*	0.58	-	-	-	0.43	0.50	-	-	-	0.55
b*	12.22	-	-	-	11.14	10.10	-	-	-	10.33
RVA										
Peak Viscosity, cP	678	-	-	-	1544	1639	-	-	-	1344
Minimum viscosity (Trough), cP	436	-	-	-	1368	1424	-	-	-	1152
Final Viscosity, cP	729	-	-	-	1759	1743	-	-	-	1491
Peak Time, min	5.20	-	-	-	6.60	6.87	-	-	-	6.47
GLUTEN										
Wet gluten (14% mb), %	31.7	-	-	-	31.0	39.1	-	-	-	37.7
Dry gluten (14% mb), %	11.5	-	-	-	10.6	13.4	-	-	-	12.9
Gluten Index	97	-	-	-	96	92	-	-	-	94
FARINOGRAM										
Water absorption (14% mb), %	62.0	-	-	-	60.7	63.5	-	-	-	62.9
Development time, min	6.4	-	-	-	3.7	4.3	-	-	-	9.0
Stability, min	8.0	-	-	-	7.0	5.3	-	-	-	12.1
Mixing tolerance index, BU	43	-	-	-	28	55	-	-	-	27
EXTENSOGRAM (45 min pull)										
Area, cm²	130	-	-	-	97	101	-	-	-	135
Maximum height, BU	438	-	-	-	381	324	-	-	-	460
Extensibility, mm	219	-	-	-	186	222	-	-	-	218
ALVEOGRAM										
Strength (S), cm²	53.2	-	-	-	41.0	43.7	-	-	-	59.6
Stability (P), mm	92	-	-	-	91	79	-	-	-	105
Distensibility (L), mm	132	-	-	-	105	145	-	-	-	119
Configuration ratio (P/L)	0.70	-	-	-	0.87	0.54	-	-	-	0.88
MIXOGRAM										
Peak time, min	2.7	-	-	-	2.7	2.0	-	-	-	3.0
100 g BAKING TEST										
Loaf volume, cm³	1144	-	-	-	1016	1251	-	-	-	1215
Evaluation (see page 79)	0	-	-	-	0	0	-	-	-	0

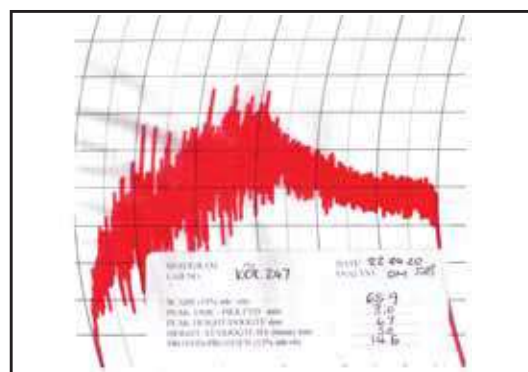
# RHEOLOGICAL GRAPHS PER PRODUCTION REGION

## MIXOGRAM

24

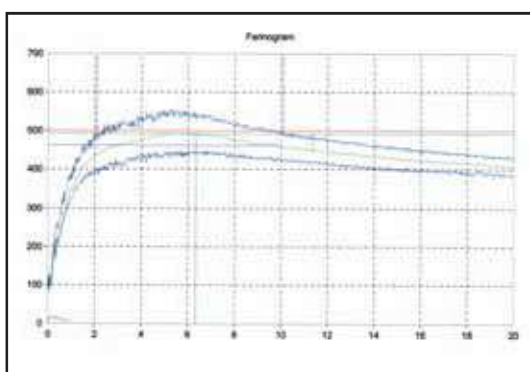


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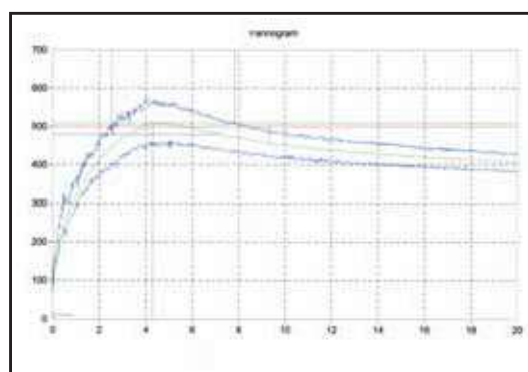


## FARINOGRAM

24

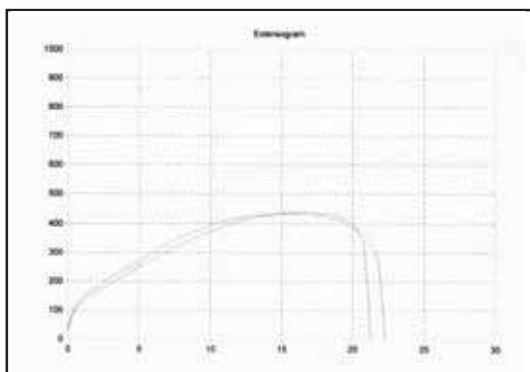


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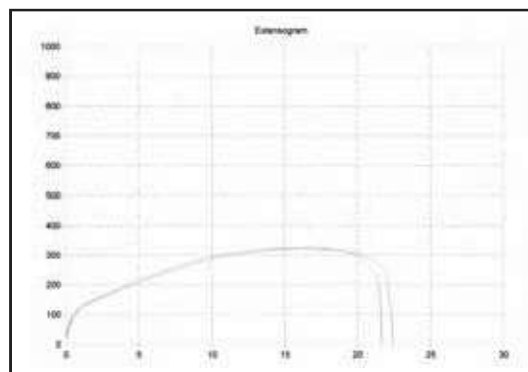


## EXTENSOGRAM

24

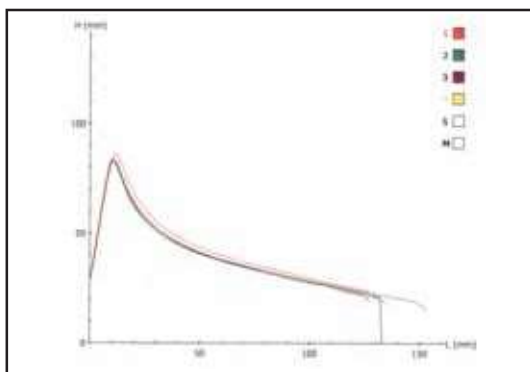


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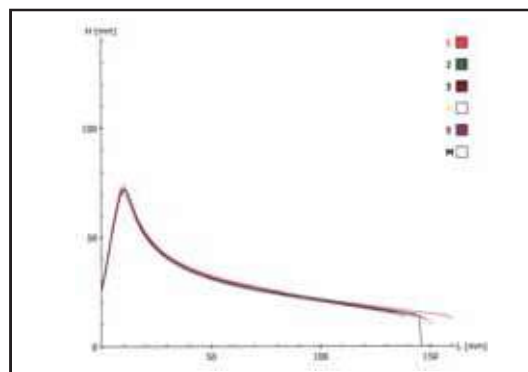


## ALVEOGRAM

24



25





# South African Quality data per production region

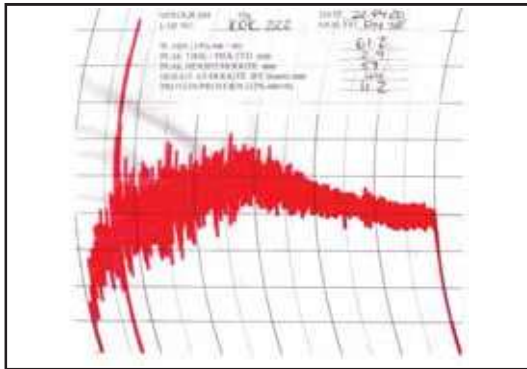
## SUMMER RAINFALL AND IRRIGATION WHEAT

PRODUCTION REGION	(26) Free State South-Eastern Region				(28) Free State Eastern Region					
WHEAT	ave	min	max	stdev	ave	min	max	stdev		
Protein (12% mb), %	13.6	10.9	15.4	1.40	13.6	11.2	16.0	1.32		
Falling number, sec	255	48	475	163.44	266	47	531	148.34		
Moisture, %	10.6	9.8	11.5	0.51	10.5	9.7	11.2	0.47		
1000 Kernel mass (13% mb), g	33.6	28.9	38.3	3.65	35.3	27.1	44.2	4.15		
Hectolitre mass (dirty), kg/hl	77.6	72.4	79.9	2.60	78.7	73.6	83.2	2.64		
Screenings (<1.8 mm sieve), %	2.08	0.72	5.30	1.42	1.55	0.10	3.77	1.03		
Total damaged kernels, %	2.89	0.24	13.02	4.38	3.91	0.06	19.76	6.25		
Combined deviations, %	5.48	1.04	14.04	4.07	5.81	0.22	21.61	6.27		
Number of samples	8				21					
CULTIVARS										
		SST 398	22.0			PAN 3161	18.8			
cultivars		PAN 3368	21.6			SST 8135	17.3			
with highest %		PAN 3111	15.1			SST 317	12.6			
occurrence		SST 347	8.5			PAN 3368	10.2			
		PAN 3161	8.0			SST 8156	9.1			
Number of samples	8				21					
MIXOGRAM (Quadromat Junior)	ave	min	max	stdev	ave	min	max	stdev		
Peak time, min	3.1	2.6	3.9	0.46	3.1	2.3	4.8	0.55		
Tail height (6 min), mm	48	42	57	4.93	49	35	58	5.07		
Number of samples	8				21					
	COMPOSITE SAMPLES									
CLASS AND GRADE	Super	B1	B2	B3	COW	Super	B1	B2	B3	COW
Bühler Extraction, %	73.5	-	-	-	76.0	75.4	76.8	-	-	74.7
FLOUR										
Protein (12% mb), %	13.2	-	-	-	12.8	12.9	11.0	-	-	13.1
Moisture, %	13.6	-	-	-	13.5	13.2	13.3	-	-	14.1
Ash (db), %	0.76	-	-	-	0.60	0.70	0.68	-	-	0.68
Colour, KJ (wet)	-3.6	-	-	-	-3.9	-4.2	-4.6	-	-	-3.3
Colour, Konica Minolta CM5 (dry)										
L*	92.57	-	-	-	93.02	92.97	93.57	-	-	92.71
a*	0.63	-	-	-	0.41	0.55	0.45	-	-	0.48
b*	11.03	-	-	-	10.33	10.24	9.73	-	-	10.13
RVA										
Peak Viscosity, cP	2134	-	-	-	333	1825	2087	-	-	308
Minimum viscosity (Trough), cP	1636	-	-	-	106	1576	1690	-	-	87
Final Viscosity, cP	2414	-	-	-	188	1969	2246	-	-	154
Peak Time, min	7.00	-	-	-	4.20	6.67	7.00	-	-	4.07
GLUTEN										
Wet gluten (14% mb), %	35.7	-	-	-	34.2	34.0	29.2	-	-	35.0
Dry gluten (14% mb), %	12.3	-	-	-	11.5	11.6	10.1	-	-	11.5
Gluten Index	95	-	-	-	94	98	97	-	-	94
FARINOGRAM										
Water absorption (14% mb), %	62.5	-	-	-	59.8	61.5	60.2	-	-	60.9
Development time, min	6.9	-	-	-	4.7	6.0	6.0	-	-	5.0
Stability, min	8.9	-	-	-	6.1	7.9	7.3	-	-	6.4
Mixing tolerance index, BU	33	-	-	-	62	37	49	-	-	54
EXTENSOGRAM (45 min pull)										
Area, cm²	101	-	-	-	122	125	112	-	-	119
Maximum height, BU	353	-	-	-	411	429	409	-	-	363
Extensibility, mm	205	-	-	-	216	212	200	-	-	237
ALVEOGRAM										
Strength (S), cm²	51.9	-	-	-	41.0	53.9	38.2	-	-	44.6
Stability (P), mm	90	-	-	-	64	92	83	-	-	77
Distensibility (L), mm	139	-	-	-	167	143	113	-	-	143
Configuration ratio (P/L)	0.65	-	-	-	0.38	0.64	0.73	-	-	0.54
MIXOGRAM										
Peak time, min	2.4	-	-	-	2.5	2.6	2.8	-	-	2.4
100 g BAKING TEST										
Loaf volume, cm³	1196	-	-	-	1175	1115	1006	-	-	1235
Evaluation (see page 79)	0	-	-	-	0	0	0	-	-	0

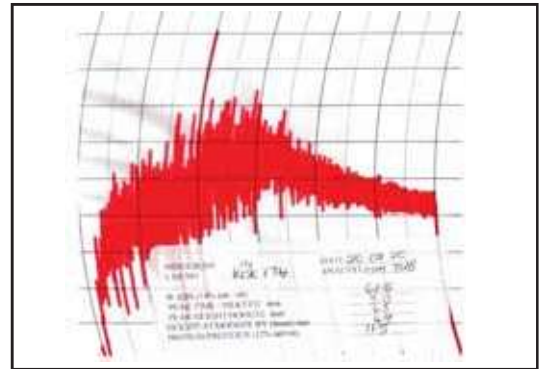
# RHEOLOGICAL GRAPHS PER PRODUCTION REGION

## MIXOGRAM

26

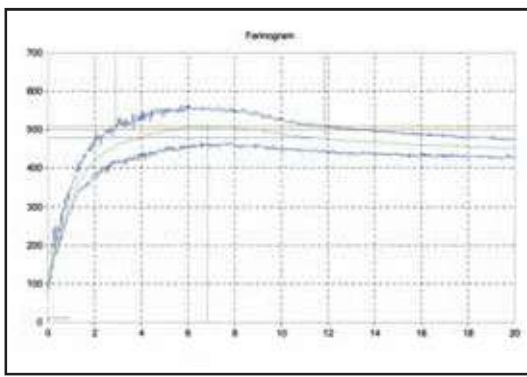


28

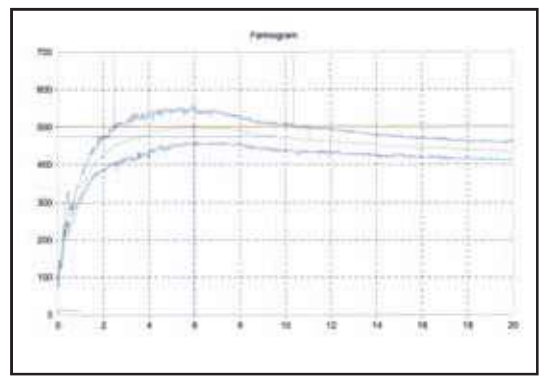


## FARINOGRAM

26

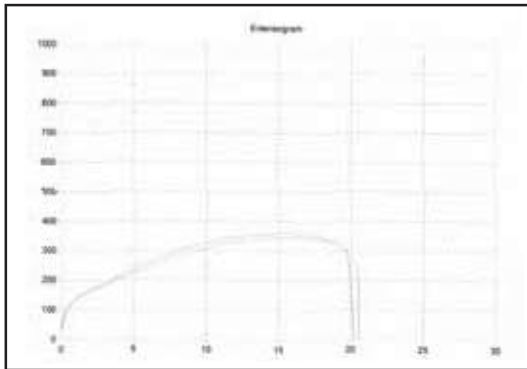


28

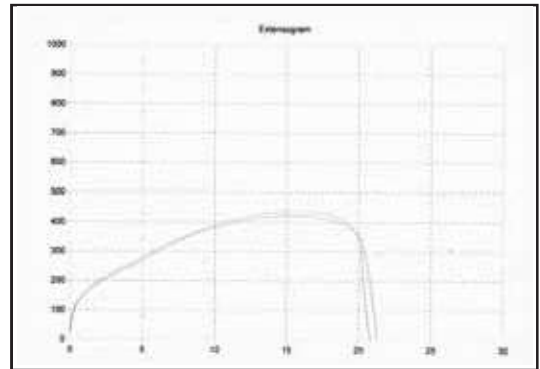


## EXTENSOGRAM

26

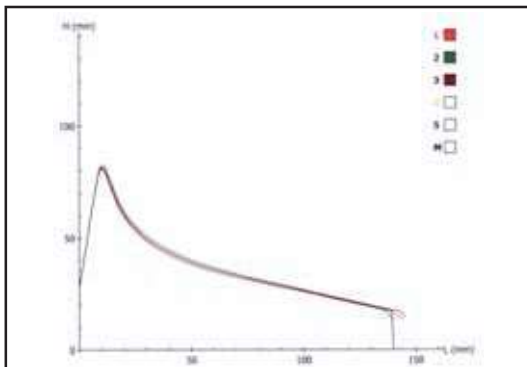


28

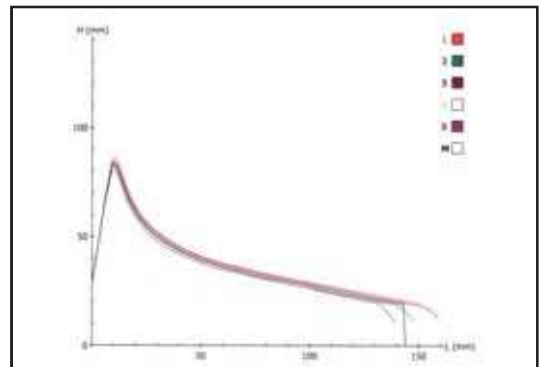


## ALVEOGRAM

26



28



# South African Quality data per production region

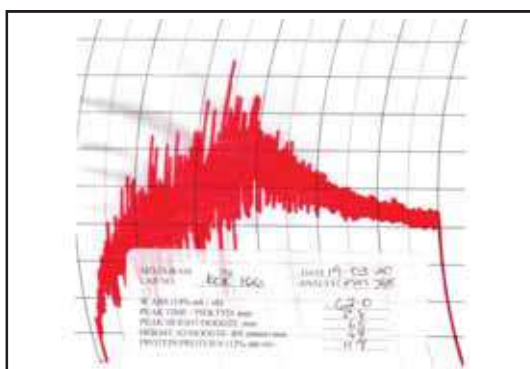
## IRRIGATION WHEAT

PRODUCTION REGION	(29) Mpumalanga Southern Region				(33) Mpumalanga Northern Region					
WHEAT	ave	min	max	stdev	ave	min	max	stdev		
Protein (12% mb), %	13.2	-	-	-	11.7	9.7	13.2	1.33		
Falling number, sec	372	-	-	-	404	369	443	30.67		
Moisture, %	11.0	-	-	-	10.4	10.0	10.8	0.29		
1000 Kernel mass (13% mb), g	39.8	-	-	-	37.5	35.5	41.4	2.03		
Hectolitre mass (dirty), kg/hl	82.9	-	-	-	82.9	81.2	84.2	0.96		
Screenings (<1.8 mm sieve), %	1.25	-	-	-	1.04	0.45	1.96	0.57		
Total damaged kernels, %	0.32	-	-	-	0.21	0.08	0.54	0.15		
Combined deviations, %	2.09	-	-	-	1.42	0.67	2.16	0.58		
Number of samples	1				7					
CULTIVARS										
		SST 884	48.0			SST 8135	47.3			
cultivars		SST 8156	21.0			SST 895	22.0			
with highest %		PAN 3400	18.0			SST 884	10.6			
occurrence		SST 895	13.0			SST 8154	9.6			
						SST 8156	7.9			
Number of samples	1				7					
MIXOGRAM (Quadromat Junior)	ave	min	max	stdev	ave	min	max	stdev		
Peak time, min	2.8	-	-	-	3.3	3.0	3.7	0.21		
Tail height (6 min), mm	49	-	-	-	49	43	54	3.37		
Number of samples	1				7					
	COMPOSITE SAMPLES									
CLASS AND GRADE	Super	B1	B2	B3	COW	Super	B1	B2	B3	COW
Bühler Extraction, %	76.5	-	-	-	-	75.0	75.1	-	76.0	-
FLOUR										
Protein (12% mb), %	12.1	-	-	-	-	12.1	11.2	-	9.1	-
Moisture, %	13.8	-	-	-	-	14.3	14.0	-	13.6	-
Ash (db), %	0.75	-	-	-	-	0.64	0.64	-	0.58	-
Colour, KJ (wet)	-4.8	-	-	-	-	-4.8	-4.8	-	-5.0	-
Colour, Konica Minolta CM5 (dry)										
L*	93.53	-	-	-	-	93.46	93.52	-	93.79	-
a*	0.49	-	-	-	-	0.62	0.53	-	0.51	-
b*	9.44	-	-	-	-	10.65	10.35	-	10.09	-
RVA										
Peak Viscosity, cP	2350	-	-	-	-	2137	2147	-	2187	-
Minimum viscosity (Trough), cP	1726	-	-	-	-	1528	1561	-	1607	-
Final Viscosity, cP	2565	-	-	-	-	2384	2423	-	2488	-
Peak Time, min	7.00	-	-	-	-	7.00	7.00	-	7.00	-
GLUTEN										
Wet gluten (14% mb), %	32.7	-	-	-	-	32.8	30.4	-	24.1	-
Dry gluten (14% mb), %	10.7	-	-	-	-	10.9	10.1	-	7.9	-
Gluten Index	94	-	-	-	-	95	93	-	98	-
FARINOGRAM										
Water absorption (14% mb), %	59.9	-	-	-	-	60.8	60.9	-	58.3	-
Development time, min	5.8	-	-	-	-	6.0	5.2	-	5.0	-
Stability, min	6.6	-	-	-	-	10.9	9.1	-	8.9	-
Mixing tolerance index, BU	53	-	-	-	-	23	30	-	34	-
EXTENSOGRAM (45 min pull)										
Area, cm²	110	-	-	-	-	123	113	-	82	-
Maximum height, BU	373	-	-	-	-	423	434	-	395	-
Extensibility, mm	214	-	-	-	-	216	191	-	150	-
ALVEOGRAM										
Strength (S), cm²	40.8	-	-	-	-	48.9	43.9	-	33.6	-
Stability (P), mm	72	-	-	-	-	88	95	-	88	-
Distensibility (L), mm	148	-	-	-	-	128	107	-	89	-
Configuration ratio (P/L)	0.49	-	-	-	-	0.69	0.89	-	0.99	-
MIXOGRAM										
Peak time, min	2.4	-	-	-	-	2.8	2.9	-	3.3	-
100 g BAKING TEST										
Loaf volume, cm³	1114	-	-	-	-	1094	1080	-	902	-
Evaluation (see page 79)	0	-	-	-	-	0	0	-	0	-

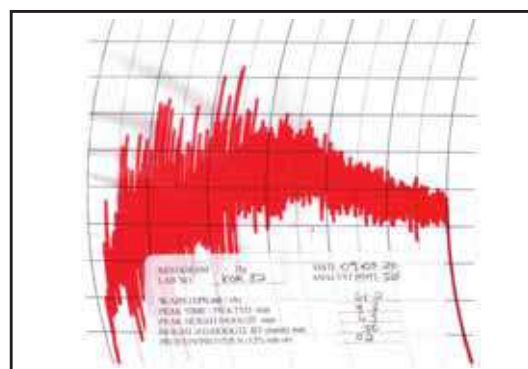
# RHEOLOGICAL GRAPHS PER PRODUCTION REGION

## MIXOGRAM

29

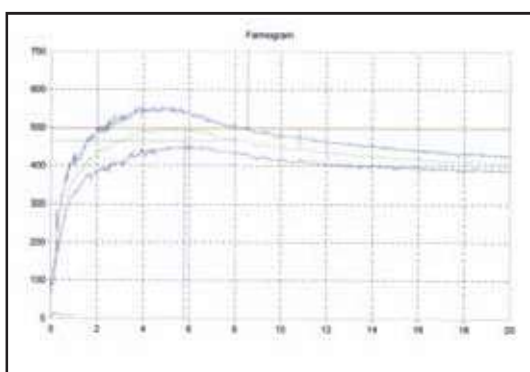


33

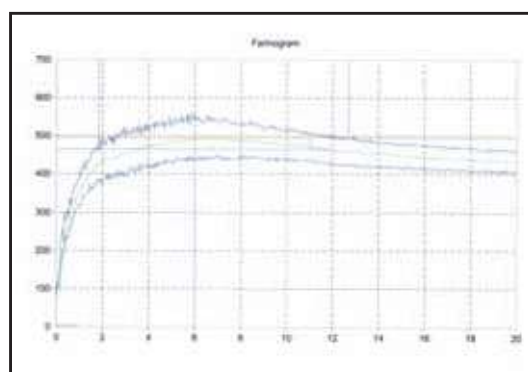


## FARINOGRAM

29

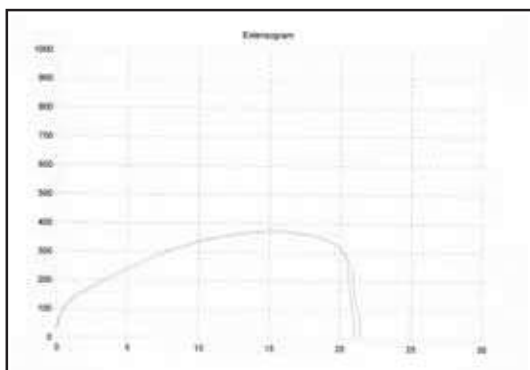


33

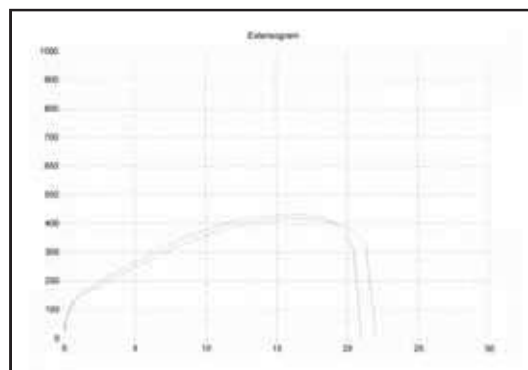


## EXTENSOGRAM

29

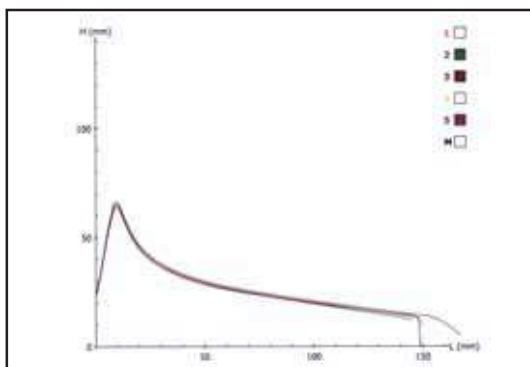


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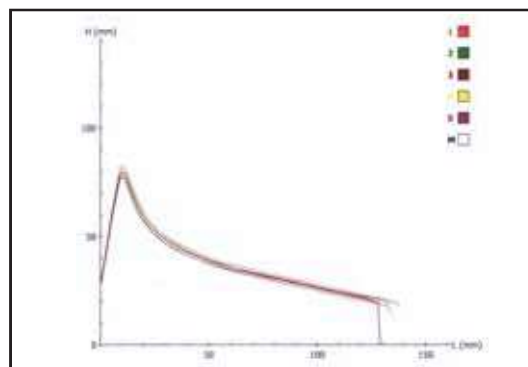


## ALVEOGRAM

29



33





# South African Quality data per production region

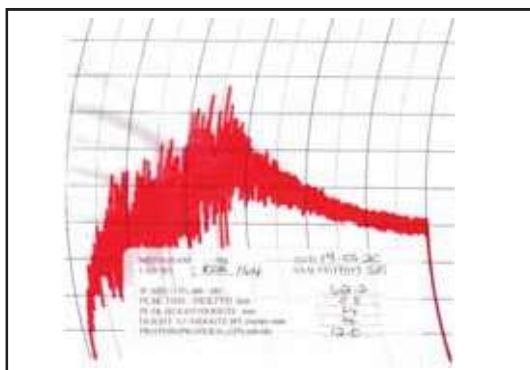
## IRRIGATION WHEAT

PRODUCTION REGION	(34) Gauteng Region					(35) Limpopo Region				
WHEAT	ave	min	max	stdev		ave	min	max	stdev	
Protein (12% mb), %	12.6	10.7	14.4	1.35		12.1	9.3	14.9	1.42	
Falling number, sec	283	46	410	142.75		431	301	561	60.76	
Moisture, %	10.2	7.9	11.4	1.19		9.7	8.4	11.1	0.77	
1000 Kernel mass (13% mb), g	35.4	27.9	39.8	4.61		40.5	33.4	51.8	4.81	
Hectolitre mass (dirty), kg/hl	79.7	66.1	84.2	6.82		83.1	79.4	85.8	1.91	
Screenings (<1.8 mm sieve), %	1.44	0.11	3.38	1.08		0.76	0.06	2.82	0.95	
Total damaged kernels, %	5.85	0.32	32.72	13.16		0.93	0.12	6.60	1.62	
Combined deviations, %	7.55	0.45	36.10	14.00		1.88	0.32	6.74	1.67	
Number of samples	6					15				
CULTIVARS										
	SST 884 38.7					SST 8135 33.4				
cultivars	SST 8156 18.2					SST 8154 15.8				
with highest %	SST 843 13.0					SST 884 13.4				
occurrence	SST 8135 11.7					SST 895 11.6				
	SST 875 9.7					SST 8156 7.5				
Number of samples	6					15				
MIXOGRAM (Quadromat Junior)	ave	min	max	stdev		ave	min	max	stdev	
Peak time, min	3.0	2.2	3.8	0.63		2.8	2.0	3.8	0.48	
Tail height (6 min), mm	44	23	56	10.98		46	42	51	2.83	
Number of samples	6					15				
	COMPOSITE SAMPLES									
CLASS AND GRADE	Super	B1	B2	B3	COW	Super	B1	B2	B3	COW
Bühler Extraction, %	75.4	-	-	-	71.7	76.5	76.4	76.4	-	77.1
FLOUR										
Protein (12% mb), %	12.8	-	-	-	11.3	12.8	11.1	10.1	-	9.7
Moisture, %	14.2	-	-	-	13.7	13.7	13.5	13.5	-	12.9
Ash (db), %	0.66	-	-	-	0.63	0.60	0.65	0.61	-	0.68
Colour, KJ (wet)	-4.8	-	-	-	-3.5	-4.9	-5.0	-5.0	-	-4.9
Colour, Konica Minolta CM5 (dry)										
L*	93.59	-	-	-	92.90	93.58	93.76	93.86	-	93.65
a*	0.47	-	-	-	0.41	0.53	0.55	0.52	-	0.56
b*	9.35	-	-	-	9.50	10.84	10.51	10.31	-	9.98
RVA										
Peak Viscosity, cP	1308	-	-	-	140	1643	2206	2328	-	2133
Minimum viscosity (Trough), cP	1024	-	-	-	10	1468	1645	1782	-	1571
Final Viscosity, cP	1395	-	-	-	13	1798	2499	2711	-	2422
Peak Time, min	6.00	-	-	-	3.07	6.73	7.00	7.00	-	7.00
GLUTEN										
Wet gluten (14% mb), %	33.1	-	-	-	30.3	34.9	29.0	25.7	-	24.3
Dry gluten (14% mb), %	11.9	-	-	-	9.9	11.5	9.3	8.6	-	8.1
Gluten Index	98	-	-	-	91	94	96	98	-	98
FARINOGRAM										
Water absorption (14% mb), %	60.6	-	-	-	55.9	62.0	62.7	59.1	-	59.9
Development time, min	6.9	-	-	-	2.2	5.3	6.0	5.8	-	5.4
Stability, min	9.9	-	-	-	3.3	6.9	7.6	7.5	-	7.7
Mixing tolerance index, BU	34	-	-	-	110	40	43	43	-	40
EXTENSOGRAM (45 min pull)										
Area, cm²	160	-	-	-	90	100	92	88	-	98
Maximum height, BU	449	-	-	-	273	324	359	362	-	441
Extensibility, mm	263	-	-	-	228	219	185	175	-	164
ALVEOGRAM										
Strength (S), cm²	51.0	-	-	-	21.2	43.3	40.5	37.7	-	36.4
Stability (P), mm	70	-	-	-	39	76	98	77	-	91
Distensibility (L), mm	188	-	-	-	273	154	94	109	-	92
Configuration ratio (P/L)	0.37	-	-	-	0.14	0.49	1.04	0.71	-	0.99
MIXOGRAM										
Peak time, min	2.9	-	-	-	2.0	2.3	2.8	3.1	-	3.4
100 g BAKING TEST										
Loaf volume, cm³	1244	-	-	-	1088	1257	1031	958	-	880
Evaluation (see page 79)	0	-	-	-	0	0	0	0	-	0

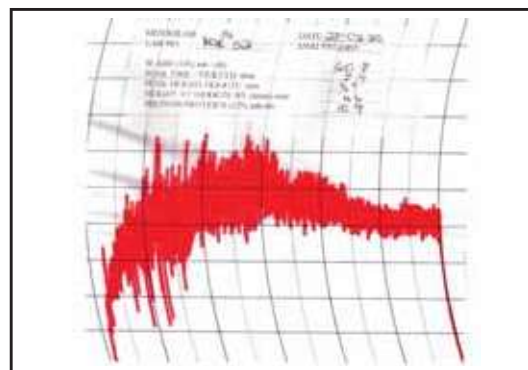
# RHEOLOGICAL GRAPHS PER PRODUCTION REGION

## MIXOGRAM

34

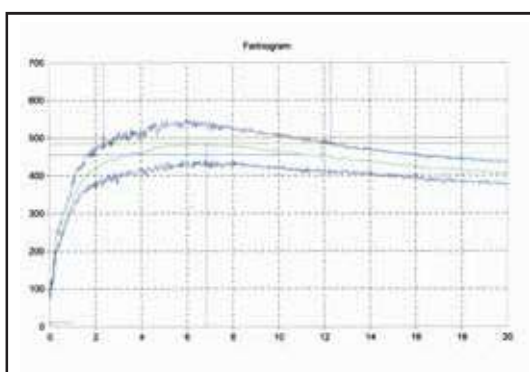


35

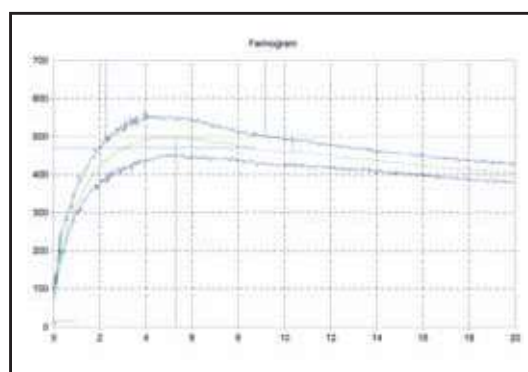


## FARINOGRAM

34

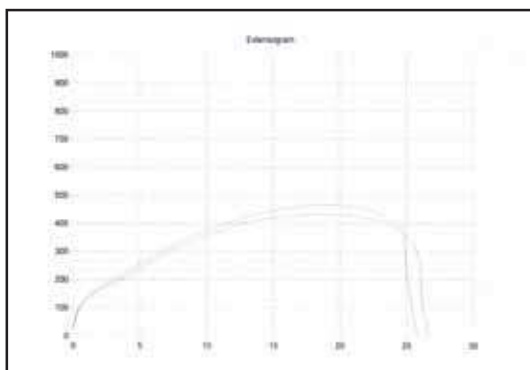


35

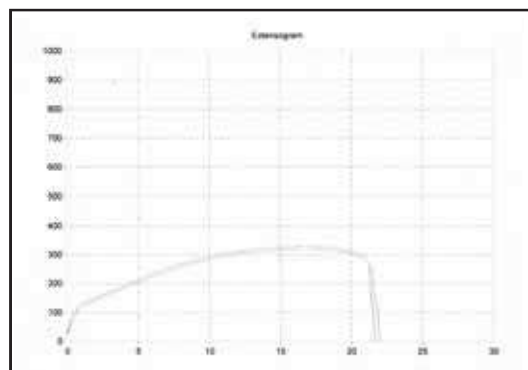


## EXTENSOGRAM

34

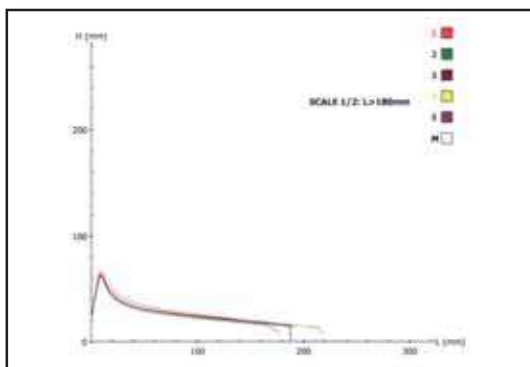


35

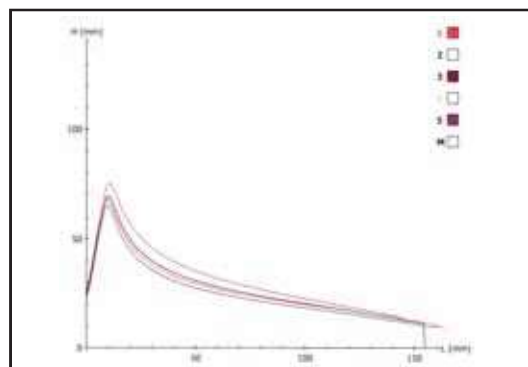


## ALVEOGRAM

34



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# South African Quality data per production region

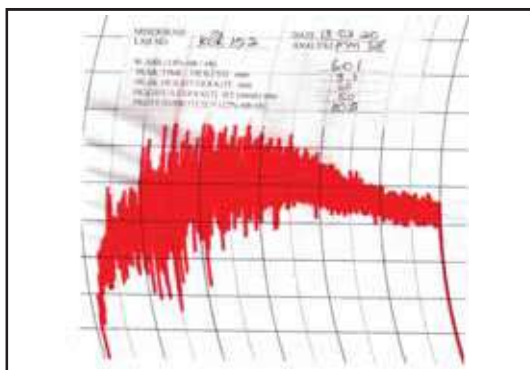
## IRRIGATION WHEAT

PRODUCTION REGION	(36) KwaZulu-Natal				
<b>WHEAT</b>					
	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>	
Protein (12% mb), %	12.8	11.3	14.5	1.14	
Falling number, sec	393	282	450	51.77	
Moisture, %	11.1	10.2	11.9	0.47	
1000 Kernel mass (13% mb), g	39.6	36.5	42.0	2.16	
Hectolitre mass (dirty), kg/hl	81.8	79.1	83.6	1.36	
Screenings (<1.8 mm sieve), %	0.94	0.24	1.62	0.39	
Total damaged kernels, %	0.42	0.12	0.78	0.22	
Combined deviations, %	1.61	0.88	2.94	0.64	
<b>Number of samples</b>	<b>10</b>				
<b>CULTIVARS</b>					
		SST 8135	53.1		
cultivars		SST 8156	16.1		
with highest %		SST 884	11.9		
occurrence		SST 8154	6.3		
		PAN 3497	5.0		
<b>Number of samples</b>	<b>10</b>				
<b>MIXOGRAM (Quadromat Junior)</b>					
	<b>ave</b>	<b>min</b>	<b>max</b>	<b>stdev</b>	
Peak time, min	3.1	2.3	4.7	0.72	
Tail height (6 min), mm	50	48	52	1.14	
<b>Number of samples</b>	<b>10</b>				
	<b>COMPOSITE SAMPLES</b>				
<b>CLASS AND GRADE</b>	<b>Super</b>	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>Cow</b>
Bühler Extraction, %	76.0	76.4	-	-	-
<b>FLOUR</b>					
Protein (12% mb), %	12.3	11.0	-	-	-
Moisture, %	13.6	13.6	-	-	-
Ash (db), %	0.63	0.74	-	-	-
Colour, KJ (wet)	-4.9	-4.9	-	-	-
Colour, Konica Minolta CM5 (dry)					
L*	93.92	93.83	-	-	-
a*	0.44	0.43	-	-	-
b*	9.60	9.89	-	-	-
<b>RVA</b>					
Peak Viscosity, cP	2210	2340	-	-	-
Minimum viscosity (Trough), cP	1693	1730	-	-	-
Final Viscosity, cP	2431	2615	-	-	-
Peak Time, min	7.00	7.00	-	-	-
<b>GLUTEN</b>					
Wet gluten (14% mb), %	33.9	29.4	-	-	-
Dry gluten (14% mb), %	11.2	9.7	-	-	-
Gluten Index	89	89	-	-	-
<b>FARINOGRAM</b>					
Water absorption (14% mb), %	61.5	60.1	-	-	-
Development time, min	5.9	6.5	-	-	-
Stability, min	8.0	7.5	-	-	-
Mixing tolerance index, BU	39	48	-	-	-
<b>EXTENSOGRAM (45 min pull)</b>					
Area, cm <sup>2</sup>	103	102	-	-	-
Maximum height, BU	354	373	-	-	-
Extensibility, mm	203	198	-	-	-
<b>ALVEOGRAM</b>					
Strength (S), cm <sup>2</sup>	46.2	39.1	-	-	-
Stability (P), mm	85	76	-	-	-
Distensibility (L), mm	140	131	-	-	-
Configuration ratio (P/L)	0.61	0.58	-	-	-
<b>MIXOGRAM</b>					
Peak time, min	2.6	2.8	-	-	-
<b>100 g BAKING TEST</b>					
Loaf volume, cm <sup>3</sup>	1198	1156	-	-	-
Evaluation (see page 79)	0	0	-	-	-

# RHEOLOGICAL GRAPHS PER PRODUCTION REGION

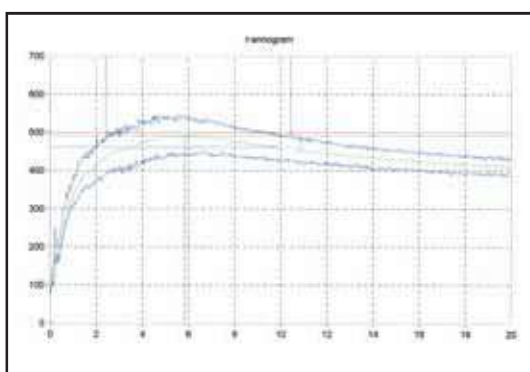
## MIXOGRAM

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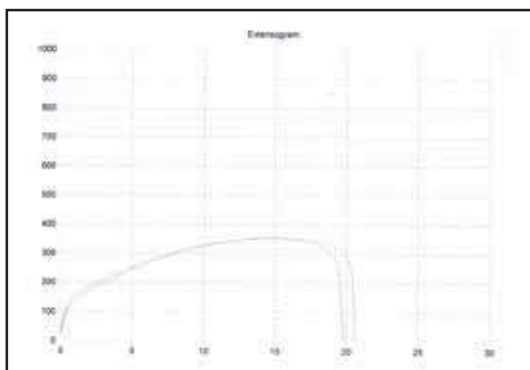
## FARINOGRAM

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## EXTENSOGRAM

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## ALVEOGRAM

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