

Quality of Ontario wheat • 1999

Samples used to prepare all composites of Canada Eastern White Winter (CEWW) wheat and Canada Eastern Red (CER) were drawn by AGRICORP field personnel across the province under an agreement between the Canadian Grain Commission (CGC), AGRICORP and the Ontario Wheat Producers' Marketing Board. Samples were drawn from all wheat growing areas on the basis of county production. Individual samples were forwarded to the CGC Industry Services office in Chatham for grading and preliminary analyses. The CGC Grain Research Laboratory, Winnipeg, prepared the composites from sample sets representing soft white winter, soft red winter, hard red winter and hard red spring varieties and performed the quality analyses. Results are shown in Tables 1-4. Data for the corresponding No. 1 grade from the 1998 harvest survey are shown for comparative purposes.

Quality of Canada Eastern White Winter wheat

Table 1 shows data for the CEWW wheat grade composites. Test weight of the No. 1 grade composite is higher than the 1998 value while protein content is similar to last year. The No. 2 grade shows a much lower test weight and a lower protein content relative to the No. 1 grade. Both grades show high wheat falling number and flour amylograph peak viscosity values, indicating sound kernel characteristics. Good milling performance is evident with both grades showing lower flour ash and superior flour colour values compared to last year's No. 1 grade composite.

Farinograph and alveograph results indicate that dough strength properties are stronger compared to last year. The No. 2 grade shows a higher strength level relative to the No. 1 grade. Cookie performance is inferior to 1998. Electrophoretic analysis of the composites shows a predominance of the variety Harus. Zavitz, 25W33 and Karena are present at levels above 10%.

Quality of Canada Eastern Red wheat – soft red winter wheat varieties

Quality data for CER wheat composites representing soft red winter wheat varieties are shown on Table 2. Test weight for the No. 1 grade is higher than last year. Both grades show higher protein content than 1998. High wheat falling number and flour amylograph peak viscosity values and low wheat and flour α -amylase activities for both grades indicate a high degree of soundness in the crop. Milling performance is superior to last year as indicated by lower flour ash and better flour colour. Farinograph and alveograph results show stronger dough strength properties compared to 1998. Cookie properties are superior to last year. The predominant soft red winter variety is 2540 followed by Freedom and AC Winsloe as determined by electrophoretic analysis.

Quality of Canada Eastern Red wheat – hard red winter wheat varieties

Table 3 shows data for the No. 1 grade composite of CER wheat representing hard red winter wheat varieties. Test weight is slightly higher than last year while protein content is somewhat lower. Wheat falling number and flour amylograph peak viscosity values are higher than last year but still show elevated levels of α -amylase activity. Lower flour ash content and better flour colour demonstrate improved milling performance.

Dough strength properties are similar to last year. Baking absorption is higher than 1998 while loaf volume is comparable. Electrophoretic analysis of the No. 1 grade composite indicates that Fundulea continues to be the predominant variety.

Quality of Canada Eastern Red wheat – hard red spring wheat varieties

Table 4 shows data for CER wheat composites representing hard red spring wheat varieties. A high test weight is evident for the No. 1 grade. Both grades show higher protein content than 1998. Wheat falling number and flour amylograph peak viscosity values are consistent with the elevated levels of wheat and flour α -amylase. Farinograph results indicate somewhat stronger dough strength properties compared to last year. Baking properties are superior to last year as shown by higher loaf volume and much higher baking absorption. The increase in protein content may account for most of the improvement. Electrophoretic analysis of the composites shows that the predominant hard red spring variety is Quantum. AC Brio, Celtic, AC Domain and AC Walton are present at levels above 10%.

For more information contact:

Ken Preston
Tel: (204) 983-3324
kpreston@cgc.ca

**Table 1 • Ontario wheat • Canada Eastern White Winter wheat
Quality data for 1999 and 1998 harvest survey grade composite samples**

Quality parameter ¹	1999		1998
	No. 1	No. 2	No. 1
Wheat			
Test weight, kg/hl	80.3	77.7	79.6
Weight per 1000 kernels, g	35.5	34.6	36.8
Protein content, %	10.0	9.3	10.1
Protein content, % (dry matter basis)	11.6	10.8	11.7
Ash content, %	1.32	1.29	1.36
α-amylase activity, units/g	4.5	12.5	14.5
Falling number, s	360	305	325
Flour yield, %	76.5	76.2	77.0
PSI	71	72	73
Flour			
Protein content, %	9.3	8.7	9.5
Wet gluten content, %	25.1	22.3	25.1
Ash content, %	0.45	0.45	0.50
Grade colour	-1.0	-1.4	-0.7
AGTRON colour, %	72	71	64
Starch damage, %	2.6	2.6	2.4
α-amylase activity, units/g	2.0	6.5	7.5
Amylograph peak viscosity, BU	490	360	235
Maltose value, g/100 g	1.2	1.2	1.2
AWRC, %	58	58	65
Farinogram			
Absorption, %	51.5	50.8	50.4
Development time, min	1.75	1.5	1.25
Mixing tolerance index, BU	125	110	145
Stability, min	2.5	3.5	2.0
Alveogram			
Length, mm	124	133	142
P (height x 1.1), mm	23	29	18
W, x 10 ⁻⁴ joules	59	95	52
Cookie test			
Spread, mm	83.0	83.9	84.9
Ratio (spread/thickness)	9.3	9.5	10.2

¹ Unless otherwise specified, data are reported on a 13.5% moisture basis for wheat and a 14.0% moisture basis for flour.

Table 2 • Ontario wheat • Canada Eastern Red wheat • soft red winter wheat varieties
Quality data for 1999 and 1998 harvest survey grade composite samples

Quality parameter ¹	1999		1998
	No. 1	No. 2	No. 1
Wheat			
Test weight, kg/hl	81.1	78.8	80.4
Weight per 1000 kernels, g	36.0	34.0	34.8
Protein content, %	10.7	10.4	10.0
Protein content, % (dry matter basis)	12.4	12.0	11.6
Ash content, %	1.29	1.36	1.29
α-amylase activity, units/g	1.5	2.0	1.5
Falling number, s	360	345	390
Flour yield, %	76.0	74.8	75.9
PSI	70	71	71
Flour			
Protein content, %	9.4	9.4	9.2
Wet gluten content, %	24.9	24.3	23.1
Ash content, %	0.46	0.47	0.52
Grade colour	0.4	0.8	1.2
AGTRON colour, %	60	55	54
Starch damage, %	2.7	2.5	3.0
α-amylase activity, units/g	0.5	0.5	0.5
Amylograph peak viscosity, BU	775	805	560
Maltose value, g/100 g	1.1	1.1	1.1
AWRC, %	60	60	67
Farinogram			
Absorption, %	53.0	52.2	51.8
Development time, min	1.75	1.5	1.5
Mixing tolerance index, BU	110	115	130
Stability, min	2.5	2.5	2.5
Alveogram			
Length, mm	135	104	104
P (height x 1.1), mm	31	28	25
W, x 10 ⁻⁴ joules	101	70	62
Cookie test			
Spread, mm	83.4	83.8	82.0
Ratio (spread/thickness)	9.3	9.5	8.4

¹ Unless otherwise specified, data are reported on a 13.5% moisture basis for wheat and a 14.0% moisture basis for flour.

Table 3 • Ontario wheat • Canada Eastern Red wheat • hard red winter wheat varieties
Quality data for 1999 and 1998 harvest survey grade composite samples

Quality parameter ¹	1999 No. 1	1998 No. 1
Wheat		
Test weight, kg/hl	83.2	82.9
Weight per 1000 kernels, g	35.6	36.0
Protein content, %	11.9	12.3
Protein content, % (dry matter basis)	13.8	14.2
Ash content, %	1.37	1.46
α-amylase activity, units/g	27.0	30.5
Falling number, s	300	270
Flour yield, %	74.9	75.4
PSI	62	64
Flour		
Protein content, %	11.1	11.8
Wet gluten content, %	30.2	31.4
Ash content, %	0.47	0.52
Grade colour	-0.2	1.1
AGTRON colour, %	60	50
Starch damage, %	4.5	4.8
α-amylase activity, units/g	14.0	15.0
Amylograph peak viscosity, BU	155	115
Maltose value, g/100 g	2.0	2.2
Farinogram		
Absorption, %	59.6	59.1
Development time, min	3.5	3.25
Mixing tolerance index, BU	60	70
Stability, min	4.5	5
Extensogram		
Length, cm	18	18
Height at 5 cm, BU	215	190
Maximum height, BU	285	250
Area, cm ²	75	65
Alveogram		
Length, mm	100	112
P (height x 1.1), mm	59	55
W, x 10 ⁻⁴ joules	182	194
Remix-to-Peak baking test		
Absorption, %	58	56
Remix time, min	1.2	1.1
Loaf volume, cm ³ /100 g flour	710	730

¹ Unless otherwise specified, data are reported on a 13.5% moisture basis for wheat and a 14.0% moisture basis for flour.

Table 4 • Ontario wheat • Canada Eastern Red wheat • hard red spring wheat varieties
Quality data for 1999 and 1998 harvest survey grade composite samples

Quality parameter ¹	1999		1998
	No. 1	No. 2	No. 1
Wheat			
Test weight, kg/hl	81.1	78.2	81.6
Weight per 1000 kernels, g	39.1	38.9	34.1
Protein content, %	14.3	13.7	13.4
Protein content, % (dry matter basis)	16.5	15.8	15.5
Ash content, %	1.55	1.48	1.65
α-amylase activity, units/g	26.0	43.5	31.5
Falling number, s	280	240	275
Flour yield, %	75.1	74.8	74.2
PSI	54	55	55
Flour			
Protein content, %	13.3	12.8	12.6
Wet gluten content, %	36.2	32.6	32.5
Ash content, %	0.49	0.45	0.54
Grade colour	0.0	0.6	1.0
AGTRON colour, %	60	57	51
Starch damage, %	6.7	6.4	6.7
α-amylase activity, units/g	13.0	22.5	13.0
Amylograph peak viscosity, BU	200	100	110
Maltose value, g/100 g	2.9	3.1	3.2
Farinogram			
Absorption, %	64.7	63.3	62.4
Development time, min	5.75	3.75	5.0
Mixing tolerance index, BU	30	10	30
Stability, min	10.0	11.5	8.0
Extensogram			
Length, cm	21	20	-
Height at 5 cm, BU	290	295	-
Maximum height, BU	530	515	-
Area, cm ²	150	140	-
Alveogram			
Length, mm	129	96	-
P (height x 1.1), mm	96	100	-
W, x 10 ⁻⁴ joules	423	360	-
Remix-to-Peak baking test			
Absorption, %	64	61	59
Remix time, min	2.7	3.1	2.1
Loaf volume, cm ³ /100 g flour	940	905	830

¹ Unless otherwise specified, data are reported on a 13.5% moisture basis for wheat and a 14.0% moisture basis for flour.