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# Quality of Ontario wheat • 2000

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## Summary

Samples used in the preparation of all grade composites were drawn by AGRICORP field personnel across the province under an agreement between the Canadian Grain Commission, 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 Canadian Grain Commission office in Chatham for grading and preliminary analyses. Sample sets representing soft white winter, soft red winter, hard red winter and hard red spring varieties were forwarded to the Grain Research Laboratory, Canadian Grain Commission in Winnipeg for compositing and quality analysis. Quality analysis results are shown in Tables 1–4. Data for the corresponding No. 1 grade from the 1999 harvest survey are shown for comparative purposes.

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## Quality of Canada Eastern White Winter wheat

Table 1 shows data for the Canada Eastern White Winter wheat grade composites. Test weight and kernel weight of the No. 1 grade composite are lower than 1999 values. Wheat protein content of the top grade is also lower compared to last year. The No. 2 grade shows lower test weight and slightly lower protein content relative to the No. 1 grade. Increased levels of  $\alpha$ -amylase are evident in both grades resulting in lower wheat falling number and flour amylograph peak viscosity values relative to last year. Milling yield is lower while flour ash is higher in this year's crop. Flour colour is similar to last year.

Farinograph and alveograph results indicate that dough strength properties are weaker compared to last year. Cookie spread for the No. 1 grade is superior while the ratio of spread to thickness is inferior compared to last year. Electrophoretic analysis of the No. 1 grade composite shows a predominance of the varieties Harus and 25W33.

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

Quality data for Canada Eastern Red wheat composites representing soft red winter wheat varieties are shown on Table 2. Test weight and kernel weight for the No. 1 grade are lower than last year. Both grades show lower protein content than 1999. High wheat falling number and flour amylograph peak viscosity values and low wheat and flour  $\alpha$ -amylase activity for the No. 1 grade indicate a high degree of soundness in the crop. The No. 2 grade also shows sound kernel characteristics although values are inferior to the No. 1 grade. Milling yield is inferior to last year as indicated by lower yield and higher flour ash and flour colour values. Farinograph and alveograph data indicate weaker dough strength properties compared to 1999. Cookie spread values are similar while the ratio of spread to thickness is inferior compared to last year. Electrophoretic analysis of the No. 1 grade composite shows that the predominant soft red winter variety is Freedom, followed by Mendon and 2540.

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

Table 3 shows data for the No. 1 and No. 2 grade composites of Canada Eastern Red wheat representing hard red winter wheat varieties. Test weight and kernel weight are slightly lower than last year while protein content is lower. Wheat falling number and flour amylograph peak viscosity values are similar to last year. Milling quality is inferior compared to 1999.

Farinograph, extensograph and alveograph results indicate weaker dough properties compared to last year. Remix-to-peak baking absorption and volume are inferior compared to 1999 values. Electrophoretic analysis of the No. 1 grade composite shows that the variety Fundulea continues to predominate.

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

Table 4 shows data for the No. 1 Canada Eastern Red wheat composite representing hard red spring wheat varieties. For the No. 1 grade, test weight and kernel weight are lower than last year. Lower protein content is also evident this year. The No. 1 grade shows higher wheat falling number and flour amylograph peak viscosity values compared to 1999. Farinograph, extensograph and alveograph results indicate weaker dough properties compared to last year. Remix-to-peak baking quality is inferior in baking absorption and loaf volume relative to 1999 results. Electrophoretic analysis of the composite shows that the predominant hard red spring wheat variety is Quantum. Celtic and AC Barrie are also present at levels above 10%.

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**Table 1 • Ontario wheat • Canada Eastern White Winter wheat  
Quality data for 2000 and 1999 harvest survey grade composite samples**

Quality parameter*	2000		1999
	No. 1	No. 2	No. 1
<b>Wheat</b>			
Test weight, kg/hl	79.0	78.0	80.3
Weight per 1000 kernels, g	34.8	33.7	35.5
Protein content, %	9.2	9.0	10.0
Protein content, % (dry matter basis)	10.6	10.4	11.6
Ash content, %	1.61	1.46	1.32
$\alpha$ -amylase activity, units/g	15.0	22.0	4.5
Falling number, s	290	265	360
Flour yield, %	75.9	75.3	76.5
PSI	71	71	71
<b>Flour</b>			
Protein content, %	8.2	7.9	9.3
Wet gluten content, %	21.6	20.4	25.1
Ash content, %	0.49	0.46	0.45
Grade colour	-0.9	-0.9	-1.0
AGTRON colour, %	74	72	72
Starch damage, %	3.1	3.1	2.6
$\alpha$ -amylase activity, units/g	6.0	10.5	2.0
Amylograph peak viscosity, BU	200	115	490
Maltose value, g/100 g	1.2	1.4	1.2
AWRC, %	64.8	64.0	58
<b>Farinogram</b>			
Absorption, %	51.5	51.6	51.5
Development time, min	1.0	0.75	1.75
Mixing tolerance index, BU	150	140	125
Stability, min	2.0	1.0	2.5
<b>Alveogram</b>			
Length, mm	107	107	124
P (height x 1.1), mm	22	23	23
W, x 10 <sup>-4</sup> joules	56	59	59
<b>Cookie test</b>			
Spread, mm	84.5	82.5	83.0
Ratio (spread/thickness)	8.9	8.5	9.3

\* 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 2000 and 1999 harvest survey grade composite samples**

Quality parameter*	2000		1999
	No. 1	No. 2	No. 1
<b>Wheat</b>			
Test weight, kg/hl	78.5	78.1	81.1
Weight per 1000 kernels, g	34.3	34.0	36.0
Protein content, %	9.3	9.4	10.7
Protein content, % (dry matter basis)	10.8	10.9	12.4
Ash content, %	1.57	1.56	1.29
α-amylase activity, units/g	2.5	10.5	1.5
Falling number, s	355	305	360
Flour yield, %	74.8	74.5	76.0
PSI	71	72	70
<b>Flour</b>			
Protein content, %	8.2	8.3	9.4
Wet gluten content, %	20.7	21.5	24.9
Ash content, %	0.47	0.49	0.46
Grade colour	0.9	1.1	0.4
AGTRON colour, %	59	58	60
Starch damage, %	3.0	3.1	2.7
α-amylase activity, units/g	1.5	4.0	0.5
Amylograph peak viscosity, BU	510	350	775
Maltose value, g/100 g	1.1	1.2	1.1
AWRC, %	66.2	66.5	60
<b>Farinogram</b>			
Absorption, %	51.9	52.7	53.0
Development time, min	1.0	1.0	1.75
Mixing tolerance index, BU	125	120	110
Stability, min	2.0	2.0	2.5
<b>Alveogram</b>			
Length, mm	103	94	135
P (height x 1.1), mm	29	30	31
W, x 10 <sup>-4</sup> joules	69	72	101
<b>Cookie test</b>			
Spread, mm	83.4	83.7	83.4
Ratio (spread/thickness)	8.6	8.7	9.3

\* 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 2000 and 1999 harvest survey grade composite samples**

Quality parameter*	2000		1999
	No. 1	No. 2	No. 1
<b>Wheat</b>			
Test weight, kg/hl	82.6	80.4	83.2
Weight per 1000 kernels, g	35.4	34.4	35.6
Protein content, %	11.4	10.8	11.9
Protein content, % (dry matter basis)	13.2	12.5	13.8
Ash content, %	1.51	1.45	1.37
$\alpha$ -amylase activity, units/g	17.0	20.5	27.0
Falling number, s	315	285	300
Flour yield, %	74.1	73.9	74.9
PSI	65	65	62
<b>Flour</b>			
Protein content, %	10.6	9.9	11.1
Wet gluten content, %	28.7	25.9	30.2
Ash content, %	0.54	0.51	0.47
Grade colour	0.3	0.6	-0.2
AGTRON colour, %	63	59	60
Starch damage, %	5.4	4.7	4.5
$\alpha$ -amylase activity, units/g	7.5	11.0	14.0
Amylograph peak viscosity, BU	190	145	155
Maltose value, g/100 g	2.3	2.0	2.0
<b>Farinogram</b>			
Absorption, %	60.4	58.0	59.6
Development time, min	3.5	2.0	3.5
Mixing tolerance index, BU	65	60	60
Stability, min	4.5	4.0	4.5
<b>Extensogram</b>			
Length, cm	19	21	18
Height at 5 cm, BU	130	120	215
Maximum height, BU	165	150	285
Area, cm <sup>2</sup>	45	45	75
<b>Alveogram</b>			
Length, mm	92	100	100
P (height x 1.1), mm	55	48	59
W, x 10 <sup>-4</sup> joules	141	137	182
<b>Remix-to-Peak baking test</b>			
Absorption, %	52	50	58
Remix time, min	1.3	1.2	1.2
Loaf volume, cm <sup>3</sup> /100 g flour	640	600	710

\* 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 2000 and 1999 harvest survey grade composite samples**

Quality parameter*	2000 No. 1	1999 No. 1
<b>Wheat</b>		
Test weight, kg/hl	79.8	81.1
Weight per 1000 kernels, g	33.8	39.1
Protein content, %	13.0	14.3
Protein content, % (dry matter basis)	15.0	16.5
Ash content, %	1.68	1.55
$\alpha$ -amylase activity, units/g	13.5	26.0
Falling number, s	330	280
Flour yield, %	74.9	75.1
PSI, %	58	54
<b>Flour</b>		
Protein content, %	12.3	13.3
Wet gluten content, %	32.4	36.2
Ash content, %	0.50	0.49
Grade colour	-0.4	0.0
AGTRON colour, %	70	60
Starch damage, %	6.7	6.7
$\alpha$ -amylase activity, units/g	6.0	13.0
Amylograph peak viscosity, BU	255	200
Maltose value, g/100 g	2.7	2.9
<b>Farinogram</b>		
Absorption, %	64.0	64.7
Development time, min	5.25	5.75
Mixing tolerance index, BU	30	30
Stability, min	8.0	10.0
<b>Extensogram</b>		
Length, cm	22	21
Height at 5 cm, BU	245	290
Maximum height, BU	445	530
Area, cm <sup>2</sup>	125	1
<b>Alveogram</b>		
Length, mm	117	129
P (height x 1.1), mm	89	96
W, x 10 <sup>-4</sup> joules	334	423
<b>Remix-to-Peak baking test</b>		
Absorption, %	59	64
Remix time, min	2.0	2.7
Loaf volume, cm <sup>3</sup> /100 g flour	840	940

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