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Quality of Ontario wheat 2006

N. M. Edwards

Program Manager, Bread Wheat Studies and Baking Research

S. G. Stevenson

Chemist, Wheat Protein Research

J. Lowe

Regional Director, Bayport Region

Contact: Susan Stevenson

Chemist, Wheat Protein Research

Tel.: 204 983-3341

Email: sstevenson@grainscanada.gc.ca

Fax: 204 983-0724

Grain Research Laboratory
Canadian Grain Commission
1404-303 Main Street
Winnipeg MB R3C 3G8
www.grainscanada.gc.ca

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Quality of Ontario wheat 2006

Table of contents	Introduction	3
	Wheat, Canada Eastern White Winter	3
	Wheat, Canada Eastern Red - soft red winter wheat.	4
	Wheat, Canada Eastern Red - hard red winter wheat	4
	Wheat, Canada Eastern Red - hard red spring wheat	5

Tables	Table 1 - Wheat - Canada Eastern White Winter wheat Quality data for 2006 and 2005 harvest survey grade composite samples	6
	Table 2 - Wheat, Canada Eastern Red - soft red winter wheat varieties Quality data for 2006 and 2005 harvest survey grade composite samples	7
	Table 3 - Wheat, Canada Eastern Red - hard red winter wheat varieties Quality data for 2006 and 2005 harvest survey grade composite samples	8
	Table 4 - Wheat, Canada Eastern Red - hard red spring wheat varieties Quality data for 2006 and 2005 harvest survey grade composite samples	9

Quality of Ontario wheat 2006

Introduction

Ontario wheat production for the 2006 crop year was estimated at 2.5 million tonnes. Of the total production, approximately 85% was red wheat. The primary grading factors were mildew or weathering, contrasting classes, and sprouted, particularly in the Canada Eastern White Winter. Samples used in the preparation of all grade composites were drawn by field personnel with the Ontario Weather Network. 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, Ontario 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, Manitoba for compositing and quality analysis. Quality analysis results are shown in Tables 1-4. Data from the 2005 survey are shown in the quality tables for comparison purposes.

Wheat, Canada Eastern White Winter

Table 1 shows data for the Canada Eastern White Winter wheat grade composites. For this year's No. 1 grade composite, the test weight is lower, however, kernel weight is higher than the 2005 value. Wheat protein content of the top grade is lower than 2005. Compared to the No. 1 grade, the No. 2 grade shows lower test weight and kernel weight but similar protein content. The results for falling number, amylograph peak viscosity and alpha-amylase activity of both wheat and flour for the No. 1 grade are lower than 2005 and suggest some evidence of sprouting. The No. 2 grade shows lower values for falling number and amylograph peak viscosity and higher levels of alpha-amylase activity in both wheat and flour than the No. 1 grade. The No. 1 grade shows improved milling yield with lower ash content than last year. Farinograph shows 3.5% lower water absorption than last year and weaker dough strength. Alveograph results indicate greater extensibility this year and weaker overall dough strength. The AACC cookie test shows similar spread and ratio relative to 2005. Electrophoretic analysis of the No. 1 grade composite indicates Superior to be the predominant variety followed by AC Mountain, Whitby and AC Essex. These four varieties accounted for 80% of the varieties in the 2006 composite.

Wheat, Canada Eastern Red - soft red winter wheat

Quality data for Canada Eastern Red wheat composites representing soft red winter wheat varieties are shown in Table 2. Test weight for the No. 1 grade is slightly lower than 2005 while kernel weight is slightly higher. Wheat protein and ash content are lower than last year. Wheat falling number, flour amylograph peak viscosity values and alpha-amylase activity indicate a reasonable degree of soundness in this wheat class for both grades. Milling yield is slightly lower for the No. 1 grade compared to 2005, however, flour ash content is lower and flour colour is comparable. Farinograph and alveograph data indicate weaker dough strength properties and slightly lower absorption compared to 2005. Cookie spread and ratio of spread to thickness values are higher compared to 2005 for the No. 1 grade. Electrophoretic analysis of the No. 1 grade indicates Warwick, 25R47 and Vienna to be the predominant varieties.

Wheat, Canada Eastern Red - hard red winter wheat

Table 3 shows data for the Canada Eastern Red wheat composites representing hard red winter wheat varieties. Test weight and protein content are lower for No. 1, when compared to 2005. Kernel weight is similar to that in 2005. While wheat falling number is only slightly lower than last year, flour amylograph peak viscosity and wheat and flour alpha-amylase values indicate some lack of soundness. Milling yield is comparable to the previous survey. Wheat ash values are similar to 2005, flour ash is slightly lower and flour colour is slightly brighter. Farinograph shows lower water absorption than last year and weaker dough strength properties. Extensograph and alveograph results indicate slightly less extensible and weaker dough properties compared to 2005. Remix-to-peak absorption is lower than 2005 while the mixing time requirement is similar and loaf volume is lower. Electrophoretic analysis of the No. 1 grade composite indicates Harvard, Maxine and Fundulea to be the predominant varieties.

Wheat, Canada Eastern Red - hard red spring wheat

Table 4 shows data for the No. 1 Canada Eastern Red wheat composite representing hard red spring wheat varieties. Test weight is higher than 2005, while kernel weight is similar. Protein content of this year's No. 1 grade is almost 1% lower than last year. The composite shows similar wheat falling number and flour amylograph peak viscosity values to 2005, indicative of sound wheat. Flour yield is slightly better than 2005 with slightly improved flour colour and comparable flour ash content. Farinograph absorption is approximately 4% higher this year, with quicker development time and slightly longer stability. Extensograph results indicate comparable dough properties to 2005, while alveograph appears slightly stronger. Remix-to-peak baking absorption is lower than 2005, and mixing time is slightly longer. Remix loaf volume is lower than last year, consistent with the lower protein content seen this year. Electrophoretic analysis of the No. 1 grade composite indicates Sable and 606 to be the predominant varieties.

**Table 1 - Wheat, Canada Eastern White Winter
Quality data for 2006 and 2005 harvest survey grade composite samples**

Quality parameter ¹	2006		2005
	No. 1	No. 2	No. 1
Wheat			
Test weight, kg/hL	78.3	77.3	79.1
Weight per 1000 kernels, g	37.5	35.7	34.8
Protein content, %	9.3	9.1	10.6
Protein content, % (dry matter basis)	10.8	10.5	12.3
Ash content, %	1.43	1.43	1.51
Alpha-amylase activity, units/g	8.5	22.0	5.5
Falling number, s	300	265	375
Flour yield, %	76.0	74.8	74.9
PSI, %	71	71	70
Flour			
Protein content, %	8.4	8.2	9.8
Wet gluten content, %	21.7	20.8	26.6
Ash content, %	0.49	0.49	0.51
Grade colour, Satake units	-1.8	-1.0	-1.5
AGTRON colour, %	76	69	75
Starch damage, %	3.3	3.6	3.2
Alpha-amylase activity, units/g	5.5	7.5	3.0
Amylograph peak viscosity, BU	270	170	425
Maltose value, g/100g	1.2	1.4	1.2
AWRC, %	58.4	60.9	63.4
Farinogram			
Absorption, %	49.9	51.1	52.6
Development time, min	1.25	1.25	2.25
Mixing tolerance index, BU	100	100	75
Stability, min	2.5	2.0	4.0
Alveogram			
Length, mm	152	147	135
P (height x 1.1), mm	23	28	28
W, x 10 ⁻⁴ joules	78	85	98
Cookie test			
Spread, mm	83.3	82.9	83.4
Ratio (spread/thickness)	9.3	8.9	9.0

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 - Wheat, Canada Eastern Red - soft red winter wheat varieties
Quality data for 2006 and 2005 harvest survey grade composite samples**

Quality parameter ¹	2006		2005
	No.1	No. 2	No.1
Wheat			
Test weight, kg/hL	79.5	77.5	81.2
Weight per 1000 kernels, g	35.0	36.1	33.8
Protein content, %	9.2	8.7	10.6
Protein content, % (dry matter basis)	10.6	10.0	12.3
Ash content, %	1.44	1.43	1.55
Alpha-amylase activity, units/g	3.0	4.5	2.5
Falling number, s	320	320	355
Flour yield, %	74.8	74.6	75.4
PSI, %	71	73	70
Flour			
Protein content, %	8.1	7.6	9.3
Wet gluten content, %	19.6	17.0	23.2
Ash content, %	0.45	0.43	0.47
Grade colour, Satake units	-0.4	-0.1	-0.5
AGTRON colour, %	65	62	67
Starch damage, %	3.4	3.3	3.2
Alpha-amylase activity, units/g	1.5	2.0	0.5
Amylograph peak viscosity, BU	525	490	650
Maltose value, g/100g	1.1	1.0	1.1
AWRC, %	61.8	62.6	66.5
Farinogram			
Absorption, %	51.8	50.3	53.4
Development time, min	1.25	1.50	3.00
Mixing tolerance index, BU	95	90	80
Stability, min	2.0	2.0	4.0
Alveogram			
Length, mm	117	107	127
P (height x 1.1), mm	34	32	36
W, x 10 ⁻⁴ joules	85	85	124
Cookie test			
Spread, mm	84.6	85.3	83.9
Ratio (spread/thickness)	9.6	9.7	8.8

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 - Wheat, Canada Eastern Red - hard red winter wheat varieties
Quality data for 2006 and 2005 harvest survey grade composite samples**

Quality parameter ¹	2006		2005
	No. 1	No. 2	No. 1
Wheat			
Test weight, kg/hL	80.8	80.2	82.1
Weight per 1000 kernels, g	38.9	40.5	38.2
Protein content, %	10.8	10.7	12.5
Protein content, % (dry matter basis)	12.5	12.4	14.5
Ash content, %	1.50	1.48	1.49
Alpha-amylase activity, units/g	10.0	12.0	6.5
Falling number, s	345	335	375
Flour yield, %	75.3	75.2	75.5
PSI, %	57	57	56
Flour			
Protein content, %	9.7	9.7	11.7
Wet gluten content, %	23.7	23.2	29.0
Ash content, %	0.46	0.45	0.48
Grade colour	-1.4	-1.2	-0.9
AGTRON colour, %	69	71	66
Starch damage, %	7.7	7.0	7.4
Alpha-amylase activity, units/g	5.0	6.0	2.5
Amylograph peak viscosity, BU	200	175	390
Maltose value, g/100g	2.9	2.6	2.5
Farinogram			
Absorption, %	60.8	58.6	63.0
Development time, min	1.75	2.25	3.75
Mixing tolerance index, BU	45	40	15
Stability, min	3.0	4.0	10.0
Extensogram			
Length, cm	16	17	20
Height at 5 cm, BU	350	350	340
Maximum height, BU	500	560	570
Area, cm ²	115	120	155
Alveogram			
Length, mm	89	81	95
P (height x 1.1), mm	110	99	117
W, x 10 ⁻⁴ joules	340	281	419
Baking (Remix-to-peak baking test)			
Absorption, %	55	55	59
Remix time, min	3.3	3.1	3.2
Loaf volume, cm ³ /100 g flour	690	710	770

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 - Wheat, Canada Eastern Red - hard red spring wheat varieties
Quality data for 2006 and 2005 harvest survey grade composite samples**

Quality parameter ¹	2006		2005
	No. 1	No. 2	No. 1
Wheat			
Test weight, kg/hL	81.7	79.5	79.9
Weight per 1000 kernels, g	32.5	33.2	32.3
Protein content, %	13.9	13.0	14.8
Protein content, % (dry matter basis)	16.1	15.0	17.1
Ash content, %	1.73	1.76	1.77
Alpha-amylase activity, units/g	9.0	9.0	16.5
Falling number, s	345	350	335
Flour yield, %	74.9	74.3	74.3
PSI, %	52	51	52
Flour			
Protein content, %	13.3	12.2	14.4
Wet gluten content, %	33.4	30.7	37.4
Ash content, %	0.55	0.57	0.55
Grade colour	-0.8	-0.5	-0.3
AGTRON colour, %	64	61	62
Starch damage, %	8.5	9.1	7.4
Alpha-amylase activity, units/g	3.0	2.5	5.0
Amylograph peak viscosity, BU	350	375	325
Maltose value, g/100g	2.8	3.0	2.7
Farinogram			
Absorption, %	65.0	65.8	60.9
Development time, min	3.00	2.50	7.25
Mixing tolerance index, BU	10	30	25
Stability, min	14.5	5.5	11.0
Extensogram			
Length, cm	20	20	22
Height at 5 cm, BU	380	400	350
Maximum height, BU	740	760	730
Area, cm ²	190	195	195
Alveogram			
Length, mm	116	88	110
P (height x 1.1), mm	125	134	112
W, x 10 ⁻⁴ joules	533	458	464
Baking (Remix-to-peak baking test)			
Absorption, %	61	59	64
Remix time, min	4.0	4.0	3.2
Loaf volume, cm ³ /100 g flour	880	855	965

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