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Quality of western Canadian wheat exports

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Quality of western Canadian wheat exports

February 1–July 31, 2008

Introduction

This bulletin reports quality data for cargoes of all classes of western Canadian wheat exported by ship from February 1 to July 31, 2008. Two types of information are presented:

- Distribution tables for moisture content, test weight and other grade determining factors assessed during grading of individual cargoes by Industry Services, Canadian Grain Commission (CGC), at time of vessel loading.
- Quality data (wheat and flour characteristics, milling, end-use quality) for weighted composite samples that represent all cargoes of a given grade (and protein segregate where appropriate) exported during the six-month period. For Wheat, Canada Western Red Spring and Wheat, No. 1, 2 and 3 Canada Western Amber Durum, composites representing Atlantic and Pacific shipments are prepared and tested. For the other wheat classes only one series of composites representing all cargoes (Atlantic and Pacific) exported from Canada during the period are reported. Quality data are not available for classes or protein segregates where insufficient sample was received for compositing due to low/no tonnage exported.

Variety registration and class designation lists ensure that a high degree of uniformity in quality is maintained in export shipments. Under the authority of the *Canada Grain Act*, the CGC establishes and maintains lists of wheat varieties eligible to be graded into each wheat class. A listing of varieties included in the CGC variety designation list for each class may be found on the CGC web site at <http://grainscanada.gc.ca/legislation-legislation/orders-arretes/ocgcm-maccg-eng.htm>

Wheat, Canada Western Red Spring

Wheat, Canada Western Red Spring (CWRS) is well known for its excellent milling and baking quality. Four milling grades are available, the top two of which are further segregated according to protein content. Guaranteed minimum protein content is reported on a 13.5% moisture basis.

Higher protein CWRS wheat is highly suitable for blending and for the production of high volume pan bread. It is also commonly used alone or in blends with other wheat for the production of hearth bread, steamed bread, noodles, flat bread and common wheat pasta.

Currently, the predominant varieties of Wheat, Canada Western Red Spring grown are Lillian, Harvest, Superb, AC Barrie and McKenzie.

**Table 1 - Moisture content, test weight and other grade determining factors¹
Atlantic export cargoes of Wheat, Canada Western Red Spring
Third and fourth quarters 2007-2008**

	No. 1 CWRS			No. 2 CWRS			
	Guaranteed minimum protein content, %						
	14.5	14.0	13.5	14.5	14.0	13.5	13.0
Number of cargoes	8	22	4	6	7	5	1
Thousands of tonnes	106	330	54	89	87	96	6
Moisture content, %							
Weighted mean	13.1	13.2	12.9	13.5	13.4	13.6	13.5
Standard deviation	0.40	0.40	0.26	0.26	0.16	0.09	0.00
Minimum	12.5	12.3	12.5	13.2	13.2	13.5	13.5
Maximum	13.6	14.0	13.1	13.9	13.7	13.7	13.5
Test weight, kg/hL							
Weighted mean	81.2	81.5	81.9	80.9	80.8	81.5	81.5
Standard deviation	0.40	0.60	0.66	0.62	0.62	0.22	0.00
Minimum	80.5	80.5	81.2	79.9	79.7	81.3	81.5
Maximum	81.7	82.5	82.8	81.8	81.5	81.8	81.5
Wheats of other classes, %							
Weighted mean	0.21	0.16	0.18	0.22	0.19	0.13	0.20
Cereal grains other than wheat, %							
Weighted mean	0.06	0.07	0.08	0.10	0.10	0.12	0.11

¹ Canadian Grain Commission, Industry Services data for official loading samples tested at time of loading.

**Table 2 - Wheat, Canada Western Red Spring
Atlantic export cargo composites
Third and fourth quarters 2007-08**

Quality parameter ¹	No. 1 CWRS				No. 2 CWRS			
	Guaranteed minimum protein content, %							
	1CWRS	14.5	14.0	13.5	2CWRS	14.5	14.0	13.5
Wheat								
Weight per 1000 kernels, g	27.7	27.4	29.3	30.1	31.0	29.5	28.0	31.3
Protein content, %	14.3	14.8	14.4	14.0	14.1	14.8	14.3	13.8
Protein content, % (dry matter basis)	16.5	17.1	16.7	16.2	16.3	17.1	16.5	16.0
Ash content, %	1.66	1.72	1.71	1.65	1.68	1.71	1.71	1.65
Falling number, s	465	490	470	445	380	390	380	405
PSI	54	54	53	53	54	54	53	53
Milling								
Flour yield								
Clean wheat basis, %	76.9	76.5	76.3	76.5	76.6	76.4	76.7	76.7
0.50% ash basis, %	74.4	74.0	73.8	74.5	74.6	74.4	74.2	74.2
Flour								
Protein content, %	13.7	14.2	13.9	13.3	13.5	14.2	13.8	13.2
Wet gluten content, %	36.7	38.3	36.6	35.4	36.2	37.7	36.6	34.9
Ash content, %	0.55	0.55	0.55	0.54	0.54	0.54	0.55	0.55
Grade colour, Satake units	-1.8	-1.4	-1.4	-1.9	-1.8	-1.3	-1.4	-1.5
AGTRON colour, %	70	67	66	72	69	69	67	67
Starch damage, %	7.5	7.2	7.3	7.3	7.4	7.1	7.4	7.7
Amylograph peak viscosity, BU	685	750	690	650	440	495	510	460
Maltose value, g/100g	2.3	2.2	2.3	2.3	2.4	2.3	2.4	2.5
Farinogram								
Absorption, %	64.7	64.7	64.9	64.2	65.6	65.0	65.2	65.7
Development time, min	6.75	7.25	6.75	5.50	6.50	7.00	7.75	7.00
Mixing tolerance index, BU	20	30	20	20	25	25	20	30
Stability, min	10.5	10.0	10.0	10.5	9.0	11.0	10.0	8.0
Extensogram								
Length, cm	20	20	21	19	22	22	21	20
Height at 5 cm, BU	290	320	290	290	255	255	305	280
Maximum height, BU	520	530	535	465	425	455	520	465
Area, cm ²	130	135	145	115	120	135	140	125
Alveogram								
Length, mm	118	127	115	104	112	122	133	107
P (height x 1.1), mm	107	98	103	104	105	97	103	115
W, x 10 ⁻⁴ joules	406	396	388	365	373	373	422	392
Baking (Canadian Short Process baking test)								
Absorption, %	64	64	64	64	64	65	65	66
Mixing energy, Watts	8.6	9.1	10.9	8.7	8.9	9.7	9.5	8.3
Mixing time, min	4.0	4.1	3.9	4.3	3.9	4.1	4.1	4.1
Loaf volume, cm3/100 g flour	1105	1110	1105	1095	1115	1070	1100	1095

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 - Moisture content, test weight and other grade determining factors¹
Pacific export cargoes of Wheat, Canada Western Red Spring
Third and fourth quarters 2007-2008

	No. 1 CWRS						
	Guaranteed minimum protein content, %						
	15.0	14.5	14.0	13.5	13.0	12.5	
Number of cargoes	1	2	7	23	1	1	
Thousands of tonnes	4	37	100	497	36	3	
Moisture content, %							
Weighted mean	11.7	12.2	12.7	12.6	13.0	13.0	
Standard deviation	0.00	0.64	0.29	0.26	0.00	0.00	
Minimum	11.7	11.7	12.1	12.2	13.0	13.0	
Maximum	11.7	12.6	13	13.2	13.0	13.0	
Test weight, kg/hL							
Weighted mean	80.7	80.7	81.1	81.4	81.9	83.0	
Standard deviation	0.00	0.49	0.35	0.38	0.00	0.00	
Minimum	80.7	80.4	80.6	80.0	81.9	83.0	
Maximum	80.7	81.1	81.5	81.8	81.9	83.0	
Wheats of other classes, %							
Weighted mean	0.40	0.49	0.20	0.22	0.16	0.30	
Cereal grains other than wheat, %							
Weighted mean	0.08	0.10	0.11	0.13	0.09	0.16	
	No. 2 CWRS					No. 3 CWRS	Feed
	Guaranteed minimum protein content, %						
	14.0	13.5	13.0	12.5	12.0		
Number of cargoes	6	12	6	17	1	14	1
Thousands of tonnes	106	300	168	464	37	422	6
Moisture content, %							
Weighted mean	13.8	13.9	13.9	13.8	13.7	14.2	14.3
Standard deviation	0.34	0.32	0.38	0.20	0.00	0.14	0.00
Minimum	13.2	13.2	13.0	13.2	13.7	14.0	14.3
Maximum	14.2	14.3	14.2	14.1	13.7	14.5	14.3
Test weight, kg/hL							
Weighted mean	80.5	80.9	81.6	81.8	81.9	81.2	79.8
Standard deviation	0.50	0.51	0.22	0.47	0.00	0.53	0.00
Minimum	79.9	79.8	81.1	80.5	81.9	80.3	79.8
Maximum	81.4	81.7	81.7	82.4	81.9	82.0	79.8
Wheats of other classes, %							
Weighted mean	0.16	0.09	0.10	0.18	0.17	0.28	0.00
Cereal grains other than wheat, %							
Weighted mean	0.21	0.21	0.19	0.21	0.25	0.28	0.27

¹ Canadian Grain Commission, Industry Services data for official loading samples tested at time of loading.

**Table 4 - Wheat, Canada Western Red Spring
Pacific export cargo composites
Third and fourth quarters 2007-08**

Quality parameter ¹	No. 1 CWRs			No. 2 CWRs				No. 3 CWRs ²
	Guaranteed minimum protein content, %							
	14.5	14.0	13.5	14.0	13.5	13.0	12.5	
Wheat								
Weight per 1000 kernels, g	27.8	28.7	29.4	30.7	31.5	33.0	32.4	34.1
Protein content, %	15.1	14.5	14.1	14.4	13.7	13.3	12.9	12.9
Protein content, % (dry matter basis)	17.5	16.7	16.3	16.6	15.8	15.3	15.0	14.9
Ash content, %	1.58	1.57	1.60	1.62	1.59	1.55	1.56	1.57
Falling number, s	470	435	440	340	355	370	385	330
PSI	52	53	53	54	53	53	52	53
Milling								
Flour yield								
Clean wheat basis, %	76.1	76.3	76.6	76.4	76.1	76.1	75.0	76.1
0.50% ash basis, %	75.1	75.8	75.1	74.9	75.1	76.6	74.0	75.1
Flour								
Protein content, %	14.4	13.7	13.4	13.7	13.2	12.7	12.4	12.5
Wet gluten content, %	38.6	36.8	35.1	36.9	35.2	33.2	32.7	33.7
Ash content, %	0.52	0.51	0.53	0.53	0.52	0.49	0.52	0.52
Grade colour, Satake units	-1.4	-1.8	-1.7	-1.3	-1.8	-1.8	-1.7	-1.2
AGTRON colour, %	66	72	70	67	69	73	71	66
Starch damage, %	6.9	7.5	7.7	7.6	7.5	8.0	8.2	8.6
Amylograph peak viscosity, BU	735	695	635	420	440	415	495	310
Maltose value, g/100g	2.1	2.3	2.3	2.4	2.5	2.7	2.6	2.8
Farinogram								
Absorption, %	65.8	65.7	65.7	66.2	66.1	66.9	66.2	67.4
Development time, min	7.00	5.80	5.75	6.75	6.25	5.25	4.75	5.75
Mixing tolerance index, BU	25	20	30	30	25	30	30	30
Stability, min	9.5	10.0	7.8	9.0	8.5	8.0	7.3	7.0
Extensogram								
Length, cm	21	20	19	20	20	20	21	20
Height at 5 cm, BU	260	275	270	260	235	225	235	240
Maximum height, BU	465	440	430	440	390	365	365	375
Area, cm ²	125	115	105	115	105	95	105	95
Alveogram								
Length, mm	122	116	109	121	107	89	84	85
P (height x 1.1), mm	95	106	113	111	113	130	118	130
W, x 10 ⁻⁴ joules	353	382	384	410	380	391	331	360
Baking (Canadian Short Process baking test)								
Absorption, %	65	65	66	66	66	66	65	66
Mixing energy, Watts	8.7	9.0	8.4	8.9	9.2	10.9	10.2	8.9
Mixing time, min	3.9	3.9	3.9	3.8	4.1	4.0	4.1	3.8
Loaf volume, cm ³ /100 g flour	1085	1085	1075	1065	1050	1040	1030	1025

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

² Not segregated by protein content

Wheat, Canada Western Amber Durum

Canada has an international reputation as a reliable supplier of high quality durum wheat, furnishing about two thirds of the world's exports in recent years. The attributes of Canadian durum that attract demand are reliability of supply, cleanliness, uniformity and consistency within and between shipments, and excellent end-product quality.

Canada has a strong commitment to quality. This extends to strict varietal control to protect the inherent quality of all grades of amber durum wheat and to strict adherence to wheat grade standards. The requirement that only durum varieties of high intrinsic quality are registered is a cornerstone of the Canadian grading system.

Currently, the predominant varieties of Wheat, Canada Western Amber Durum grown are Strongfield, AC Avonlea and Kyle.

Table 5 - Moisture content, test weight and other grade determining factors¹
Export cargoes of Wheat, Canada Western Amber Durum
Third and fourth quarters 2007-2008

	No. 1 CWAD		No. 2 CWAD		No. 3 CWAD	
	Atlantic	Pacific	Atlantic	Pacific	Atlantic	Pacific
Number of cargoes	31	8	21	2	7	0
Thousands of tonnes	557	125	219	27	58	0
Moisture content, %						
Weighted mean	12.1	12.1	12.4	12.2	13.3	-
Standard deviation	0.27	0.21	0.29	0.35	0.61	-
Minimum	11.3	11.8	11.7	12.0	11.9	-
Maximum	12.8	12.3	12.9	12.5	13.6	-
Test weight, kg/hL						
Weighted mean	81.5	81.5	82.0	80.9	81.6	-
Standard deviation	0.67	0.37	0.56	0.42	0.58	-
Minimum	79.8	81.1	80.1	80.6	80.8	-
Maximum	83.3	82.2	82.6	81.2	82.3	-
Vitreous kernels, %						
Weighted mean	88.4	88.2	79.4	81.6	66.5	-
Wheats of other classes, %						
Weighted mean	0.55	0.65	0.91	0.85	1.31	-
Cereal grains other than wheat, %						
Weighted mean	0.08	0.13	0.12	0.30	0.23	-

¹ Canadian Grain Commission, Industry Services data for official loading samples tested at time of loading.

**Table 6 - Wheat, Canada Western Amber Durum
Export cargo composites
Third and fourth quarters 2007-08**

Quality parameter ¹	No. 1 CWAD		No. 2 CWAD	No. 3 CWAD
	Atlantic	Pacific	Atlantic	Atlantic
Wheat				
Weight per 1000 kernels, g	35.8	37.3	35.4	40.7
Protein content, %	14.2	14.2	13.9	13.3
Protein content, % (dry matter basis)	16.4	16.4	16.1	15.4
Ash content, %	1.60	1.60	1.61	1.63
Yellow pigment content, ppm	8.9	8.5	8.8	8.2
Falling number, s	470	490	425	350
Milling yield, %	74.7	74.4	75.0	74.7
Semolina yield, %	66.1	66.0	66.1	65.7
PSI, %	36.0	38.2	38.0	37.8
Semolina				
Protein content, %	13.2	13.1	12.7	12.5
Wet gluten content, %	32.0	31.5	31.0	30.5
Dry gluten content, %	11.3	11.2	11.0	10.7
Ash content, %	0.73	0.71	0.71	0.70
Yellow pigment content, ppm	8.3	8.0	7.8	7.5
AGTRON colour, %	68	69	69	68
Minolta colour:				
L*	86.3	86.4	86.8	86.9
a*	-2.6	-2.7	-2.7	-2.7
b*	32.6	32.2	31.8	30.9
Speck count per 50 cm ²	23	25	33	33
Falling number, s	545	560	475	435
Spaghetti				
Dried at 70°C				
Minolta colour:				
L*	74.7	75.2	75.1	74.6
a*	3.4	3.0	2.9	3.4
b*	60.6	60.2	59.1	57.5
Firmness, g-cm	1114	1093	1096	1045

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

Wheat, Canada Western Hard White Spring

Wheat, Canada Western Hard White Spring (CWHWS) is a hard white spring wheat with superior milling quality producing flour with excellent colour. It is suitable for bread and noodle production.

There are three milling grades in the CWHWS class.

The most commonly grown variety of CWHWS is Snowbird.

**Table 7 - Moisture content, test weight and other grade determining factors¹
Export cargoes of Wheat, Canada Western Hard White Spring
Third and fourth quarters 2007-2008**

	No. 1 CWHWS	No. 2 CWHWS
Number of cargoes	6	4
Thousands of tonnes	57	56
Moisture content, %		
Weighted mean	13.2	13.6
Standard deviation	0.27	0.24
Minimum	12.7	13.3
Maximum	13.5	13.8
Test weight, kg/hL		
Weighted mean	80.7	81.3
Standard deviation	1.01	0.68
Minimum	79.8	80.3
Maximum	82.7	81.8
Wheats of other classes, %		
Weighted mean	0.10	0.47
Cereal grains other than wheat, %		
Weighted mean	0.06	0.22

¹ Canadian Grain Commission, Industry Services data for official loading samples tested at time of loading.

**Table 8 - Wheat, Canada Western Hard White Spring
Export cargo composites
Third and fourth quarters 2007-2008**

Quality parameter ¹	No. 1 CWHWS	No. 2 CWHWS
Wheat		
Weight per 1000 kernels, g	28.0	29.2
Protein content, %	14.3	13.7
Protein content, % (dry matter basis)	16.5	15.9
Ash content, %	1.59	1.60
Falling number, s	485	465
PSI	51	51
Milling		
Flour yield		
Clean wheat basis, %	75.6	76.2
0.50% ash basis, %	74.1	75.2
Flour		
Protein content, %	13.5	13.0
Wet gluten content, %	35.2	34.5
Ash content, %	0.53	0.52
Grade colour, Satake units	-2.3	-1.9
AGTRON colour, %	75	75
Starch damage, %	7.6	7.9
Amylograph peak viscosity, BU	1065	930
Maltose value, g/100g	2.2	2.4
Farinogram		
Absorption, %	64.7	65.3
Development time, min	6.00	6.50
Mixing tolerance index, BU	20	35
Stability, min	10.50	7.50
Extensogram		
Length, cm	19	18
Height at 5 cm, BU	305	300
Maximum height, BU	508	490
Area, cm ²	120	110
Alveogram		
Length, mm	92	90
P (height x 1.1), mm	113	123
W, x 10 ⁻⁴ joules	370	383
Baking (Canadian Short Process baking test)		
Absorption, %	65	65
Mixing energy, Watts	57.9	62.7
Mixing time, min	5.4	4.6
Loaf volume, cm ³ /100 g flour	1105	1050

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

Wheat, Canada Prairie Spring Red and Wheat, Canada Prairie Spring White

Wheat, Canada Prairie Spring Red (CPSR), used alone or in blends, has quality characteristics suitable for the production of various types of hearth bread, flat bread, noodles and related products.

The most commonly grown varieties eligible for milling grades of CPSR for the 2007-08 crop year are 5700PR, AC Crystal and AC Foremost.

Wheat, Canada Prairie Spring White (CPSW), used alone or in blends, has the quality characteristics suitable for the production of various types of flat bread, noodles, chapatis, crackers and similar products.

Table 9 - Moisture content, test weight and other grade determining factors¹
Export cargoes of Wheat, Canada Prairie Spring Red and Wheat, Canada Prairie Spring White
Third and fourth quarters 2007-2008

	No. 1 CPSR	No. 1 CPSW
Number of cargoes	1	2
Thousands of tonnes	8	21
Moisture content, %		
Weighted mean	14.4	14.0
Standard deviation	0.00	0.14
Minimum	14.4	13.9
Maximum	14.4	14.1
Test weight, kg/hL		
Weighted mean	82.0	80.6
Standard deviation	0.00	0.00
Minimum	82.0	80.6
Maximum	82.0	80.6
Wheats of other classes, %		
Weighted mean	0.00	1.96
Cereal grains other than wheat, %		
Weighted mean	0.19	0.67

¹ Canadian Grain Commission, Industry Services data for official loading samples tested at time of loading.

Wheat, Canada Western Red Winter

Wheat, Canada Western Red Winter (CWRW) is a hard wheat exhibiting excellent milling quality. It is available in two milling grades. Flour produced from high grade CWRW wheat performs well in the production of hearth bread (such as French-style bread) and certain types of noodles, and is also suitable for the production of various types of flat bread, steamed bread and related products.

**Table 10 - Moisture content, test weight and other grade determining factors¹
Export cargoes of Wheat, Canada Western Red Winter
Third and fourth quarters 2007-2008**

	No. 1 CWRW
Number of cargoes	22
Thousands of tonnes	220
Moisture content, %	
Weighted mean	12.4
Standard deviation	0.95
Minimum	10.1
Maximum	13.6
Test weight, kg/hL	
Weighted mean	82.3
Standard deviation	0.72
Minimum	81.1
Maximum	83.9
Wheats of other classes, %	
Weighted mean	0.35
Cereal grains other than wheat, %	
Weighted mean	0.18

¹ Canadian Grain Commission, Industry Services data for official loading samples tested at time of loading.

**Table 11 - Wheat, Canada Western Red Winter
Export cargo composites
Third and fourth quarter 2007-08**

Quality parameter ¹	No. 1 CWRW
Wheat	
Weight per 1000 kernels, g	28.3
Protein content, %	11.0
Protein content, % (dry matter basis)	12.8
Ash content, %	1.53
Falling number, s	465
Flour yield, %	75.7
PSI	56
Flour	
Protein content, %	10.3
Wet gluten content, %	24.4
Ash content, %	0.51
Grade colour, Satake units	-2.0
AGTRON colour, %	73
Starch damage, %	6.5
Amylograph peak viscosity, BU	609
Maltose value, g/100g	2.1
Farinogram	
Absorption, %	57.2
Development time, min	5.50
Mixing tolerance index, BU	25
Stability, min	9.50
Extensogram	
Length, cm	16
Height at 5 cm, BU	400
Maximum height, BU	620
Area, cm ²	125
Alveogram	
Length, mm	96
P (height x 1.1), mm	82
W, x 10 ⁻⁴ joules	271
Baking (Remix-to-Peak baking test)	
Absorption, %	54
Remix time, min	2.4
Loaf volume, cm ³ /100 g flour	765

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

Wheat, Canada Western Soft White Spring

Wheat, Canada Western Soft White Spring (CWSWS) is a lower protein, soft wheat with weak dough properties. Flour milled from this wheat is suitable for producing cookies, cakes, biscuits and related products. Alone or in blends with stronger wheat, CWSWS wheat can also be used to produce crackers, flat bread, steamed bread and certain types of noodles.

Most CWSWS wheat is grown under irrigation to maximize yield and minimize protein content.

The most commonly grown variety of CWSWS is AC Andrew.

**Table 12 - Moisture content, test weight and other grade determining factors¹
Export cargoes of Wheat, Canada Western Soft White Spring
Third and fourth quarters 2007-2008**

No. 2 CWSWS	
Number of cargoes	5
Thousands of tonnes	55
Moisture content, %	
Weighted mean	13.5
Standard deviation	0.32
Minimum	13.0
Maximum	13.8
Test weight, kg/hL	
Weighted mean	80.2
Standard deviation	0.59
Minimum	79.6
Maximum	81.0
Wheats of other classes, %	
Weighted mean	1.27
Cereal grains other than wheat, %	
Weighted mean	0.10

¹ Canadian Grain Commission, Industry Services data for official loading samples tested at time of loading.