



Canadian Grain  
Commission

Commission canadienne  
des grains

ISSN 1498-9603

# Quality of Ontario wheat 2008

## **N.M. Edwards**

Program Manager, Bread Wheat Research

## **S.G. Stevenson**

Chemist, Wheat Protein Research

### **Contact: Susan Stevenson**

**Chemist, Wheat Protein Research**

Tel.: 204-983-3341

Email: [susan.stevenson@grainscanada.gc.ca](mailto:susan.stevenson@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](http://www.grainscanada.gc.ca)

Canada

Quality

Innovation

Service

---

## Table of contents

Introduction .....	3
Wheat, Canada Eastern White Winter .....	3
Wheat, Canada Eastern Red – soft red winter wheat .....	3
Wheat, Canada Eastern Red – hard red winter wheat .....	4
Wheat, Canada Eastern Red – hard red spring wheat .....	4

### Tables

Table 1 - Wheat - Canada Eastern White Winter wheat Quality data for 2008 and 2007 harvest survey grade composite samples .....	5
Table 2 - Wheat, Canada Eastern Red - soft red winter wheat varieties Quality data for 2008 and 2007 harvest survey grade composite samples .....	6
Table 3 - Wheat, Canada Eastern Red - hard red winter wheat varieties Quality data for 2008 and 2007 harvest survey grade composite samples .....	7

---

# Quality of Ontario wheat– 2008

## Introduction

Ontario wheat production for the 2008 crop year was estimated at 2.9 million tonnes<sup>1</sup>. The primary grading factors were mildew and fusarium damage. Samples used in the preparation of all grade composites were drawn by field personnel with the Ontario Weather Network from all wheat growing areas on the basis of county production. Individual samples were forwarded to the Canadian Grain Commission office in Winnipeg, for grading and preliminary analyses. Composite Samples representing soft white winter, soft red winter and, hard red winter were made by the Grain Research Laboratory, Canadian Grain Commission for quality analysis. An insufficient number of samples of hard red spring wheat were received to produce a robust composite. Quality analysis results are shown in Tables 1-4. Data from the 2007 survey are shown in the quality tables for comparison purposes.

---

<sup>1</sup> Statistics Canada, *Field Crop Reporting Series*, <http://www.statcan.ca/english/freepub/22-002-XIE/22-002-XIE2008007.pdf> Vol. 87, No. 7, Oct.2008

## 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 the same however, kernel weight is higher than the 2007 value. Wheat protein is slightly lower than 2007. There was no No. 2 grade composite for 2008. The falling number, amylograph peak viscosity and alpha-amylase activity indicate the soundness expected in the No. 1 grade. Milling yield, on clean wheat basis, shows a 1% advantage over last year, but flour ash content is slightly higher than 2007. Farinograph show similar water absorption and dough strength to last year. Alveograph results indicate a somewhat less extensible dough with similar dough strength but lower baking strength than last year. The AACC cookie test exhibits similar spread and ratio relative to 2007. Electrophoretic analysis of the No. 1 grade composite indicates AC Mountain to be the predominant variety followed by 25W60, 25W41 and Superior. These four varieties accounted for 93% of the varieties in the 2008 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, kernel weight and wheat protein for the No. 1 grade are similar to 2007. Ash content is slightly higher than last year. Wheat falling number, flour amylograph peak viscosity values and alpha-amylase activity indicate soundness in this wheat class for both grades 1 and 2. Milling yield is higher for the No. 1 grade compared to 2007, but at 0.03% higher flour ash content. Flour colour is considerably less bright/duller. Wet gluten content is slightly lower for 2008. Farinograph

---

strength is comparable to last year. Alveograph data indicate slightly less extensibility but comparable resistance to deformation resulting in lower W values compared to 2007. Cookie spread and ratio of spread to thickness values are slightly lower compared to 2007 for the No. 1 grade. Electrophoretic analysis of the No. 1 grade indicates 25R47 to be the predominant variety.

## **Wheat, Canada Eastern Red – hard red winter wheat**

Table 3 shows data for Canada Eastern Red winter wheat composites, with 2007 No. 1 grade for comparison. Test weight, kernel weight and wheat protein content for No. 1 are similar to 2007. Wheat falling number and amylograph peak viscosity are higher this year and wheat and flour alpha-amylase values are lower indicating a higher degree of soundness compared to 2007. Milling yield is considerably higher than 2007, but with higher flour ash content. Flour colour is duller, and starch damage is lower this year. Farinograph shows slightly lower water absorption relative to last year and slightly higher dough strength properties. Extensograph results indicate slightly less extensible and weaker dough properties compared to 2007. Alveograph results exhibit similar dough strength properties to last year. Remix-to-peak absorption and loaf volume are comparable to 2007, with slightly shorter mixing requirements. Electrophoretic analysis of the No. 1 grade composite indicates Harvard to be the predominant variety.

## **Wheat, Canada Eastern Red – hard red spring wheat**

See introduction regarding insufficient sample to produce composite for this class.

**Table 1 - Wheat, Canada Eastern White Winter**  
**Quality data for 2008 and 2007 harvest sample grade composites**

Quality parameter <sup>1</sup>	2008	2007
	No. 1	No. 1
<b>Wheat</b>		
Test weight, kg/hL	81.2	81.2
Weight per 1000 kernels, g	38.2	35.3
Protein content, %	9.4	9.8
Protein content, % (dry matter basis)	10.9	11.4
Ash content, %	1.58	1.46
$\alpha$ -amylase activity, units/g	2.5	3.5
Falling number, s	360	370
Flour yield, %	76.7	75.7
PSI, %	68	70
<b>Flour</b>		
Protein content, %	8.4	8.8
Wet gluten content, %	22.2	22.7
Ash content, %	0.50	0.48
Grade colour, Satake units	-1.5	-2.1
AGTRON colour, %	74	77
Starch damage, %	3.6	3.4
$\alpha$ -amylase activity, units/g	0.5	1.5
Amylograph peak viscosity, BU	455	515
Maltose value, g/100g	1.2	1.2
AWRC, %	58.8	59.7
<b>Farinogram</b>		
Absorption, %	51.6	51.3
Development time, min	1.00	1.25
Mixing tolerance index, BU	90	95
Stability, min	3.0	2.0
<b>Alveogram</b>		
Length, mm	102	127
P (height x 1.1), mm	26	28
W, x 10 <sup>-4</sup> joules	49	70
<b>Cookie test</b>		
Spread, mm	82.4	82.9
Ratio (spread/thickness)	8.7	9.0

<sup>1</sup> 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 2008 and 2007 harvest sample grade composites**

Quality parameter <sup>1</sup>	2008			2007
	No.1	No. 2	No. 3	No.1
<b>Wheat</b>				
Test weight, kg/hL	81.3	79.1	76.9	80.4
Weight per 1000 kernels, g	35.6	36.9	36.8	35.5
Protein content, %	9.4	8.8	9.0	9.4
Protein content, % (dry matter basis)	10.9	10.2	10.4	10.9
Ash content, %	1.53	1.47	1.46	1.46
$\alpha$ -amylase activity, units/g	5.0	5.0	10.0	3.5
Falling number, s	360	345	325	370
Flour yield, %	76.5	75.0	75.0	75.4
PSI, %	69	70	71	71
<b>Flour</b>				
Protein content, %	8.3	7.6	7.7	8.4
Wet gluten content, %	21.5	19.3	19.5	22.1
Ash content, %	0.48	0.45	0.44	0.45
Grade colour, Satake units	0.4	0.1	0.8	-1.1
AGTRON colour, %	59	62	53	70
Starch damage, %	3.6	3.4	3.3	3.5
$\alpha$ -amylase activity, units/g	1.0	1.5	5.0	1.0
Amylograph peak viscosity, BU	480	445	275	640
Maltose value, g/100g	1.3	1.2	1.2	1.2
AWRC, %	62.2	61.7	61.8	60.9
<b>Farinogram</b>				
Absorption, %	51.7	50.6	50.7	51.2
Development time, min	2.00	1.00	1.00	1.00
Mixing tolerance index, BU	75	85	95	85
Stability, min	3.0	1.5	2.0	2.5
<b>Alveogram</b>				
Length, mm	97	91	97	109
P (height x 1.1), mm	32	29	28	30
W, x 10 <sup>-4</sup> joules	66	80	81	72
<b>Cookie test</b>				
Spread, mm	81.4	83.5	83.4	83.6
Ratio (spread/thickness)	8.4	8.8	9.0	9.3

<sup>1</sup> 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 2008 and 2007 harvest sample grade composites**

Quality parameter <sup>1</sup>	2008			2007
	No. 1	No. 2	No. 3	No. 1
<b>Wheat</b>				
Test weight, kg/hL	83.2	80.4	79.9	83.3
Weight per 1000 kernels, g	40.4	41.8	41.8	41.0
Protein content, %	10.9	10.7	10.3	10.9
Protein content, % (dry matter basis)	12.6	12.4	11.9	12.6
Ash content, %	1.47	1.48	1.41	1.45
$\alpha$ -amylase activity, units/g	13.5	26.5	19.5	38.0
Falling number, s	345	295	310	280
Flour yield, %	77.8	77.1	76.6	75.9
PSI, %	53	57	57	55
<b>Flour</b>				
Protein content, %	10.3	10.0	9.6	10.1
Wet gluten content, %	25.9	24.7	23.3	25.0
Ash content, %	0.51	0.51	0.51	0.46
Grade colour	-0.3	0.7	0.3	-1.6
AGTRON colour, %	59	59	57	68
Starch damage, %	7.3	6.4	6.3	8.2
$\alpha$ -amylase activity, units/g	5.0	9.5	11.0	11.0
Amylograph peak viscosity, BU	230	155	120	105
Maltose value, g/100g	2.6	2.5	2.6	3.6
<b>Farinogram</b>				
Absorption, %	60.6	59.2	58.8	61.3
Development time, min	4.00	2.00	1.75	1.75
Mixing tolerance index, BU	40	30	40	40
Stability, min	6.5	4.5	4.5	4.5
<b>Extensogram</b>				
Length, cm	17	18	17	20
Height at 5 cm, BU	250	280	205	355
Maximum height, BU	370	385	265	570
Area, cm <sup>2</sup>	80	90	60	150
<b>Alveogram</b>				
Length, mm	78	91	90	72
P (height x 1.1), mm	98	89	73	119
W, x 10 <sup>-4</sup> joules	258	270	206	300
<b>Baking (Remix-to-peak baking test)</b>				
Absorption, %	57	56	53	58
Remix time, min	2.4	2.3	2.2	3.4
Loaf volume, cm <sup>3</sup> /100 g flour	720	745	660	705

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