

CWRS Canada Western Red Spring

The most widely grown wheat class in Western Canada, CWRS is regarded for its superior milling and baking quality. This hard wheat has high protein content and high protein quality which means it can improve the quality of a blend if milled with lower-quality wheat.

Top Five CWRS Varieties Grown in 2023

- 1 AAC Brandon
- 2 AAC Viewfield
- 3 AAC Wheatland
- 4 AAC Starbuck
- 5 CDC Landmark

2023 EXECUTIVE SUMMARY

PRODUCTION

(5-year average, 2018-2022)

19.9 million tonnes

TOTAL WHEAT GROWN IN CANADA

63%



Protein

13.8% protein content, which is similar to the 10-year average of 13.7%.



Advice from an Expert

Sound wheat with a balance of gluten strength and extensibility.



Grading Factors

97% of the 2023 CWRS crop has graded No. 1 and No. 2.



Milling Quality

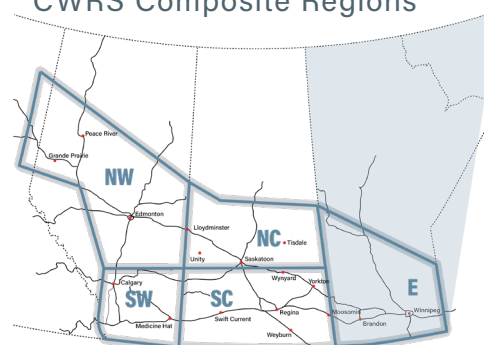
Sound wheat with good test weight and low ash content.



Application Performance

Baking: Very good bread quality. Noodles: Good colour retention and texture.

FIGURE 1
2023 Western Canadian CWRS Composite Regions



WESTERN COMPOSITE

No. 1 CWRS Canada Western Red Spring

Quality Parameter ^a	Western Composite ^b	
	2023	2022
Wheat	2023	2022
Test Weight, kg/hL	82.4	83.6
Weight Per 1000 Kernels, g	34.0	33.6
Protein Content, %	14.3	13.9
Protein Content, % (dry matter basis)	16.5	16.0
Ash Content, %	1.36	1.52
Falling Number, s	399	423
Particle Size Index, %	54	49
Milling Flour Yield Bühler Laboratory Mill		
Total Products Basis, %	75.1	75.2
0.50% Ash Basis, %	78.6	78.2

EASTERN COMPOSITE

No. 1 CWRS Canada Western Red Spring

Quality Parameter ^a	Eastern Composite ^b	
	2023	2022
Wheat	2023	2022
Test Weight, kg/hL	82.9	83.4
Weight Per 1000 Kernels, g	37.2	33.0
Protein Content, %	14.1	14.4
Protein Content, % (dry matter basis)	16.3	16.6
Ash Content, %	1.41	1.60
Falling Number, s	384	393
Particle Size Index, %	53	51
Milling Flour Yield Bühler Laboratory Mill		
Total Products Basis, %	75.1	76.3
0.50% Ash Basis, %	77.6	77.3

PRAIRIE COMPOSITE

No. 2 CWRS Canada Western Red Spring

Quality Parameter ^a	Prairie Composite ^b	
	2023	2022
Wheat	2023	2022
Test Weight, kg/hL	81.8	81.2
Weight Per 1000 Kernels, g	36.1	34.3
Protein Content, %	13.5	13.8
Protein Content, % (dry matter basis)	15.6	16.0
Ash Content, %	1.36	1.57
Falling Number, s	372	352
Particle Size Index, %	52	53
Milling Flour Yield Bühler Laboratory Mill		
Total Products Basis, %	75.8	75.2
0.50% Ash Basis, %	79.8	77.2

^a Data are reported on a 13.5% moisture basis.

^b Refer to crop region map (Figure 1). Western composite = NW, SW, NC, SC regions (non-shaded area); Eastern composite = E region (shaded area); Prairie composite = all regions.

WESTERN COMPOSITE

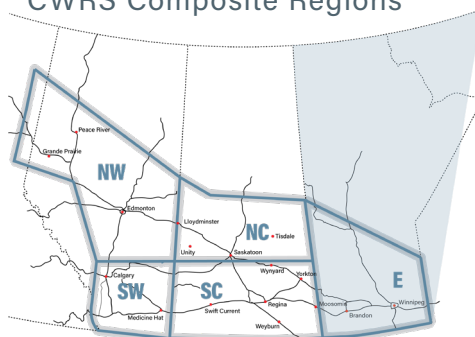
 **No. 1 CWRS**

Canada Western Red Spring

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FIGURE 1

2023 Western Canadian CWRS Composite Regions



^a Data are reported on a 13.5% moisture basis for wheat and a 14.0% moisture basis for flour except Alveograph is on a 15.0% moisture basis and starch damage is as is.

^b Refer to crop region map (Figure 1, non-shaded area).

n/a - Not available (testing will not be conducted).

Harvest assessment composites represent grain available for export. Milling, analytical, and end-product analysis conducted by Cereals Canada following the Methods of Analysis on Cereals Canada's website (<https://cerealscanada.ca/analytical-methods/>).

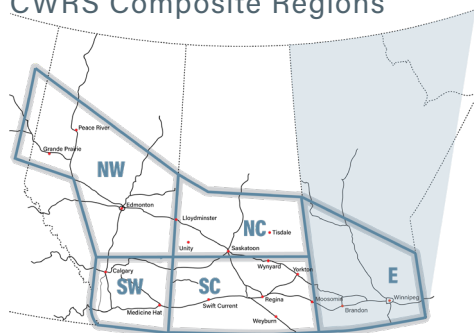
Quality Parameter ^a	Western Composite ^b			Western Composite ^b		
	2023			2022		
Flour						
Extraction	Straight Grade 75.1%	74%	60%	Straight Grade 75.2%	74%	60%
Protein Content, %	13.6	13.5	13.1	13.2	13.1	12.7
Protein Loss, %	0.7	0.8	1.1	0.7	0.8	1.2
Wet Gluten Content, %	36.8	36.9	35.5	36.5	36.5	33.5
Gluten Index, %	95	95	97	93	91	97
Ash Content, %	0.43	0.43	0.38	0.44	0.42	0.39
Colour, L*	84.6	85.1	85.4	85.1	85.0	85.7
Starch Damage, UCD	24.2	24.2	23.5	25.3	25.2	24.6
Amylograph Peak Viscosity, BU	584	597	693	710	764	801
Farinograph						
Absorption, %	62.4	62.2	61.8	65.2	65.2	64.4
Dough Development Time (DDT), min	8.4	7.9	10.9	7.5	8.3	9.9
Stability, min	16.7	22.5	48.1	15.2	16.9	35.4
Mixing Tolerance Index (MTI), BU	21	14	9	18	14	8
Extensograph (135 min)						
Maximum Resistance (Rmax), BU	695	801	880	563	632	737
Extensibility (length), cm	21.6	21.0	18.1	21.7	20.0	18.9
Area, cm ²	187	205	190	151	156	172
Alveograph						
P (height x 11), mm	108	114	121	118	116	124
L (length), mm	181	169	160	152	143	141
P/L	0.60	0.67	0.76	0.78	0.81	0.88
W, 10 ⁻⁴ J	594	607	611	590	561	585
Ie, %	64.7	66.1	65.7	69.0	68.7	68.3
Baking (No Time Dough)						
Absorption, %	64	n/a	n/a	69	n/a	n/a
Mixing Time, min	6.4	n/a	n/a	6.3	n/a	n/a
Specific Volume, cm ³ /g	7.7	n/a	n/a	7.9	n/a	n/a
Total Bread Score (out of 10)	9.3	n/a	n/a	9.1	n/a	n/a
Baking (Sponge & Dough)						
Absorption, %	63	n/a	64	68	n/a	67
Mixing Time, min	7.6	n/a	8.5	8.4	n/a	8.6
Specific Volume, cm ³ /g	7.1	n/a	6.9	7.2	n/a	7.1
Total Bread Score (out of 10)	9.2	n/a	9.6	9.5	n/a	9.9
Noodles (Fresh Yellow Alkaline)						
Colour (3h / 24h) L*	n/a	72.8 / 68.6	74.6 / 70.2	n/a	74.2 / 69.3	74.8 / 71.0
a*	n/a	0.09 / 0.69	-0.14 / 0.39	n/a	0.15 / 0.69	-0.10 / 0.44
b*	n/a	25.9 / 24.9	26.0 / 25.0	n/a	26.5 / 24.9	26.3 / 25.2
Cooked Noodle Max. Cutting Stress g/mm ²						
Cook Time - 3.5 min	n/a	38.5	38.7	n/a	37.1	36.3
Noodles (Fresh White Salted)						
Colour (3h / 24h) L*	n/a	74.9 / 71.8	75.2 / 72.9	n/a	75.7 / 72.2	76.9 / 73.8
a*	n/a	1.66 / 2.16	1.36 / 1.63	n/a	1.73 / 2.16	1.43 / 1.66
b*	n/a	25.2 / 24.7	25.4 / 24.9	n/a	25.3 / 24.9	25.5 / 25.2
Cooked Noodle Max. Cutting Stress g/mm ²						
Cook Time - 3.5 min	n/a	28.3	28.0	n/a	28.5	26.1

EASTERN COMPOSITE

No. 1 CWRS Canada Western Red Spring

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	2023	2022
Wheat		
Test Weight, kg/hL	82.9	83.4
Weight Per 1000 Kernels, g	37.2	33.0
Protein Content, %	14.1	14.4
Protein Content, % (dry matter basis)	16.3	16.6
Ash Content, %	1.41	1.60
Falling Number, s	384	393
Particle Size Index, %	53	51
Milling Flour Yield Bühler Laboratory Mill		
Total Products Basis, %	75.1	76.3
0.50% Ash Basis, %	77.6	77.3

FIGURE 1
2023 Western Canadian CWRS Composite Regions



^a Data are reported on a 13.5% moisture basis for wheat and a 14.0% moisture basis for flour except Alveograph is on a 15.0% moisture basis and starch damage is as is.

^b Refer to crop region map (Figure 1, shaded area)

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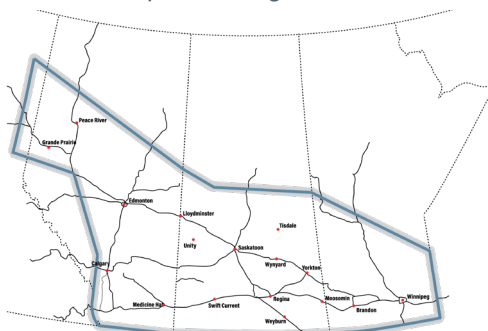
Quality Parameter ^a	Eastern Composite ^b		Eastern Composite ^b	
	2023		2022	
Flour				
Extraction	Straight Grade 75.1%	74%	Straight Grade 76.3%	74%
Protein Content, %	13.3	13.3	13.5	13.3
Protein Loss, %	0.8	0.8	0.9	1.1
Wet Gluten Content, %	33.6	34.7	36.3	36.0
Gluten Index, %	96	99	95	95
Ash Content, %	0.45	0.45	0.48	0.43
Colour, L*	84.5	84.7	84.7	85.2
Starch Damage, UCD	23.8	23.3	24.5	24.3
Amylograph Peak Viscosity, BU	562	540	593	592
Farinograph				
Absorption, %	62.0	61.9	64.9	64.5
Dough Development Time (DDT), min	8.5	7.7	7.4	7.1
Stability, min	17.5	17.3	11.6	13.5
Mixing Tolerance Index (MTI), BU	20	15	27	22
Extensograph (135 min)				
Maximum Resistance (Rmax), BU	746	790	523	583
Extensibility (length), cm	20.6	20.3	23.0	22.6
Area, cm ²	190	196	152	167
Alveograph				
P (height x 1.1), mm	101	111	97	102
L (length), mm	183	157	169	178
P/L	0.55	0.71	0.57	0.57
W, 10 ⁻⁴ J	555	554	507	572
Ie, %	63.8	65.3	66.9	68.5
Baking (No Time Dough)				
Absorption, %	65	n/a	68	n/a
Mixing Time, min	6.6	n/a	6.6	n/a
Specific Volume, cm ³ /g	7.5	n/a	7.5	n/a
Total Bread Score (out of 10)	9.2	n/a	9.4	n/a
Baking (Sponge & Dough)				
Absorption, %	64	n/a	67	n/a
Mixing Time, min	7.1	n/a	7.7	n/a
Specific Volume, cm ³ /g	7.2	n/a	7.4	n/a
Total Bread Score (out of 10)	9.4	n/a	9.7	n/a
Noodles (Fresh Yellow Alkaline)				
Colour (3h / 24h) L*	n/a	72.0 / 68.0	n/a	72.7 / 69.0
a*	n/a	0.21 / 0.67	n/a	0.45 / 0.79
b*	n/a	25.7 / 24.8	n/a	26.0 / 25.0
Cooked Noodle Max. Cutting Stress g/mm ²				
Cook Time - 3.5 min	n/a	35.0	n/a	35.0
Noodles (Fresh White Salted)				
Colour (3h / 24h) L*	n/a	74.3 / 71.6	n/a	74.8 / 71.7
a*	n/a	1.72 / 2.15	n/a	2.06 / 2.47
b*	n/a	24.7 / 24.2	n/a	24.9 / 24.4
Cooked Noodle Max. Cutting Stress g/mm ²				
Cook Time - 3.5 min	n/a	25.1	n/a	26.3

PRAIRIE COMPOSITE

No. 2 CWRS Canada Western Red Spring

Quality Parameter ^a	Prairie Composite ^b	
	2023	2022
Wheat		
Test Weight, kg/hL	81.8	81.2
Weight Per 1000 Kernels, g	36.1	34.3
Protein Content, %	13.5	13.8
Protein Content, % (dry matter basis)	15.6	16.0
Ash Content, %	1.36	1.57
Falling Number, s	372	352
Particle Size Index, %	52	53
Milling Flour Yield Bühler Laboratory Mill		
Total Products Basis, %	75.8	75.2
0.50% Ash Basis, %	79.8	77.2

FIGURE 2
2023 Western Canadian
Prairie Composite Region



^a Data are reported on a 13.5% moisture basis for wheat and a 14.0% moisture basis for flour except Alveograph is on a 15.0% moisture basis and starch damage is as is.

^b Refer to crop region map (Figure 2)

n/a - Not available (testing will not be conducted).

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Quality Parameter ^a	Prairie Composite ^b		Prairie Composite ^b
	2023		2022
Flour			
Extraction	Straight Grade 75.8%	74%	Straight Grade 75.2%
Protein Content, %	12.8	12.7	12.9
Protein Loss, %	0.7	0.8	0.9
Wet Gluten Content, %	32.7	34.0	35.0
Gluten Index, %	98	98	98
Ash Content, %	0.42	0.41	0.46
Colour, L*	84.5	84.8	85.0
Starch Damage, UCD	23.5	23.3	24.6
Amylograph Peak Viscosity, BU	475	497	407
Farinograph			
Absorption, %	61.3	61.0	63.4
Dough Development Time (DDT), min	6.5	8.6	6.3
Stability, min	14.6	17.1	14.0
Mixing Tolerance Index (MTI), BU	18	21	17
Extensograph (135 min)			
Maximum Resistance (Rmax), BU	626	879	612
Extensibility (length), cm	23.4	19.9	21.9
Area, cm ²	187	215	171
Alveograph			
P (height x 1.1), mm	102	111	98
L (length), mm	176	161	169
P/L	0.58	0.69	0.58
W, 10 ⁻⁴ J	550	570	536
Ie, %	64.3	66.0	67.9
Baking (No Time Dough)			
Absorption, %	65	n/a	67
Mixing Time, min	6.7	n/a	6.6
Specific Volume, cm ³ /g	7.9	n/a	7.7
Total Bread Score (out of 10)	9.2	n/a	9.5
Baking (Sponge & Dough)			
Absorption, %	64	n/a	66
Mixing Time, min	6.5	n/a	8.1
Specific Volume, cm ³ /g	7.2	n/a	7.7
Total Bread Score (out of 10)	9.5	n/a	9.6
Noodles (Fresh Yellow Alkaline)			
Colour (3h / 24h) L*	n/a	73.3 / 69.4	n/a
a*	n/a	-0.05 / 0.56	n/a
b*	n/a	24.9 / 24.4	n/a
Cooked Noodle Max. Cutting Stress g/mm ²			
Cook Time - 3.5 min	n/a	36.4	n/a
Noodles (Fresh White Salted)			
Colour (3h / 24h) L*	n/a	74.4 / 71.7	n/a
a*	n/a	1.45 / 1.81	n/a
b*	n/a	24.2 / 23.3	n/a
Cooked Noodle Max. Cutting Stress g/mm ²			
Cook Time - 3.5 min	n/a	26.7	n/a