Western Canadian Wheat Quality

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Global Wheat Exports

Source: International Grains Council

*Estimated  
**Forecasted
Canada: Wheat Production

Source: Statistics Canada, Table 32-10-0359-01, October 2019
Western Canadian Wheat Classes

**CWRS**
Canada Western Red Spring

**CWAD**
Canada Western Amber Durum

**CPSR**
Canada Prairie Spring Red

**CWSWS**
Canada Western Soft White Spring

**CWRW**
Canada Western Red Winter

**CWHWS**
Canada Western Hard White Spring

**CNHR**
Canada Northern Hard Red

**CPSW**
Canada Prairie Spring White

**CWES**
Canada Western Extra Strong

**CWSP**
Canada Western Special Purpose
Share of total wheat production, by class, 2019-20

- Canada Western Red Spring (CWRS), 69%
- Canada Prairie Spring Red (CPSR), 5%
- Canada Western Amber Durum (CWAD), 15%
- Canada Northern Hard Red (CNHR), 2%
- Other Winter Wheats, 5%
- Other, 4%

Source: https://aimis-simia.agr.gc.ca, September 20, 2019
Factors Affecting Quality

- Class
- Environment
- Variety
- Grade
- Wheat Quality
Grading Factors for Canadian Wheat

- Indication of the physical condition of the grain resulting from growing conditions, handling procedures or storage
- Indicates a reduction in grain quality and affects flour and end-product quality
- Only relevant grading factors are shown as the reason for a grade
Potential Downgrading Factors – 2020

Hard Vitreous Kernels

HVK

Ergot

ERG

Frost / Heat Stress

FRHTS

Test Weight

TW
Gluten

Gliadin + Glutenin → Gluten
Gluten Strength = Protein Quality

Better protein quality
(gluten strength)

All loaves baked from flour with the same protein content
Wheat Classes
CWRS: Canada Western Red Spring

- Most widely grown wheat class in Western Canada
- Hard wheat (kernel texture)
- High protein content
- Superior milling and baking quality
- Competes with US DNS or NS (Dark Northern Spring or Northern Spring)
CQRS: Properties and Applications

Milling and flour properties:

- Three milling grades
- High test weight
- High flour yields with low protein losses
- Bright flour colour
- Strong but mellow gluten
- Ideal for blending with weaker wheats
- Tolerant to overtempering
Baking properties:

- Ideal for the production of high-volume pan breads
- Also useful for production of hearth breads and flat breads
- High water absorption capacity
CWRS: Properties and Applications

Noodle and pasta applications:

- Suitable for the production of a variety of Asian noodles
- Well-balanced elasticity and extensibility for smooth and easy sheeting for production
- Suitable for pasta production in markets where pasta is made from common wheat
CPSR: Canada Prairie Spring Red

- Medium-hard kernel texture
- Medium protein content (lower than CWRS)
- Newer varieties have improved gluten strength (stronger than CWRS) and milling quality
- Competes with US HRW (Hard Red Winter)
CPSR: Properties and Applications

Milling and Flour Properties:

- Excellent flour yields, comparable to or higher than CWRS
- Low flour ash, comparable to or lower than CWRS
- High water absorption compared to other international wheats of a similar class, but lower than CWRS
- Strong gluten properties comparable to or stronger than CWRS
CPSR: Properties and Applications

Baking applications:

- Ideal for the production of pan breads, hearth breads, flat breads and crackers
- Good mixing, handling properties and fermentation tolerance
CPSR: Properties and Applications

Noodle and pasta applications:

- Ideal for the production of high quality white salted noodles with exceptional textural properties
- Used in South America for the production of pasta
CWRW: Canada Western Red Winter

- A hard wheat with excellent milling quality
- Available in three milling grades with a minimum 11% protein content guaranteed (13.5% moisture basis) for No. 1 and No. 2
- Competes with US HRW (Hard Red Winter)
CWRW: Canada Western Red Winter

Milling and flour properties:

- Medium protein content
- Medium to strong gluten
- Very high flour yields with low flour ash, resulting in good flour colour
- Lower water absorption than CWRS
End-product applications:

- Well suited for the production of hearth breads and various types of flat breads and crackers
- Baked products made from CWRW have good crumb colour
- Ideal for the production of Hokkien noodles
- Used for the production of excellent quality steamed breads with smooth, bright white surfaces and symmetrical shapes
CWSWS: Canada Western Soft White Spring

- A soft wheat with excellent milling quality
- Available in three milling grades
- Grown under irrigation in southern Alberta and Saskatchewan
- Limited production
- Used for ethanol production
CWSWS: Canada Western Soft White Spring

Milling and flour properties:

- Low protein content
- Requires short tempering times
- Weak gluten properties (very extensible)
- Very low water absorption
CWSWS: Properties and Applications

End-use applications:

- Suitable for the production of a variety of end-products requiring low protein content
  - Cakes, cookies, crackers, pastries, biscuits etc.
- Can be heat-treated for the production of thickening agents (e.g. thickener for soups)
- Also used for Asian noodles and middle eastern flat breads
## Differences Among Common Wheat Classes

<table>
<thead>
<tr>
<th>Class</th>
<th>Hardness</th>
<th>Protein Content</th>
<th>Protein Strength</th>
<th>Absorption</th>
</tr>
</thead>
<tbody>
<tr>
<td>CWRS</td>
<td>Hard</td>
<td>High (12.5-14.5%)</td>
<td>Strong</td>
<td>High (65%)</td>
</tr>
<tr>
<td>CPSR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CWRW</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CWSWS</td>
<td>Soft</td>
<td>Low (&lt;10.5%)</td>
<td>Weak</td>
<td>Low (53%)</td>
</tr>
</tbody>
</table>
CWAD: Canada Western Amber Durum

- Canada is the world’s leading exporter of durum wheat
- CWAD wheat is recognized for superior colour and semolina yield
- Wheat breeders have focused on improving colour and gluten strength in new varieties
CWAD: Properties and Applications

Milling and semolina properties:

- High levels of hard vitreous kernels (HVK) provide high semolina yields
- High protein content
- Excellent yellow pigment content levels resulting in semolina with bright yellow colour
- Strong and extensible gluten
Pasta applications:

- Pasta has bright yellow colour
- Provides excellent cooking quality, including firmness, tolerance to overcooking and low cooking loss
- Suitable for fresh and dried pasta
CWAD: Pasta Colour

**CWAD**

**CPSR**
CWAD: Properties and Applications

Couscous:
- Distinct bright yellow colour
- Has good surface texture (i.e. non-sticky) when cooked

Other applications:
- *Noodles*: fresh yellow alkaline noodles (YAN) have very bright and intense yellow colour
- *Baking*: well suited for the production of hearth-style artisan breads and flat breads
Where Does Canadian Wheat Go?

Indonesia
China
Japan
Sri Lanka
Bangladesh
UAE
Nigeria
Ghana
Algeria
Morocco
Italy
UK

Source: https://resourcetrade.earth/data?year=2018&exporter=124&category=52&units=weight
What do customers want?

- Cleanliness
- Uniformity and consistency
- Good processing and finished product quality
- Wide range of classes and grades
- Reliability of supply
Bread & Baked Products – *What do customers want?*

Singapore

Cameroon

United Kingdom

United Arab Emirates

Mexico

Mozambique
Noodle End-Products – *What do customers want?*

Kenya

Japan

Singapore

South Korea

China
Canadian Durum Exports (2018-19 crop year)

Source: Canadian Grain Commission, Exports of Canadian Grain and Flour, October 2019
Durum End-Products – *What do customers want?*

- **Italy**
  - Spaghetti
  - DIVELLA
- **Algeria**
  - Couscous
- **Morocco**
  - Couscous
- **Japan**
  - Super Pront
Canada is one of the largest producers and exporters of high quality wheat in the world.

Canadian wheat is known around the world as a high-quality wheat.

Wheat from Western Canada can be used to produce many different end-products.