



Canadian Grain
Commission

Commission canadienne
des grains



Saskatchewan Wheat Development Commission and Saskatchewan Ministry of Agriculture

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- Importance of Grain Grading
- Wheat Class Modernization



Importance of Grain Grading

The Science Behind Grain Grading

- Grading preserves the quality of individual parcels of grain
- Grading creates a set standard of quality for industry and producers
- Grading creates a balance between customer expectations and returns to the producers
 - Producers know what to expect price-wise; customers know what to expect quality-wise (consistency)

Scientific Foundation

- If a grading and classification system is to be meaningful, it must have a scientific basis
- Investigate and document the effects of end-use quality and grading factors at various levels and degrees of severity.
- Ensures our tolerances are realistic and relate to end-use impact
- The CGC regularly tests to ensure relevance and grain grade standards are reviewed and adjusted as scientific research and industry practices dictate

Visual System

- Indicators of quality
- Indicators of safety



Multiple Grading Factors

- Safety
- End use
- Marketability



Distinctly Green in Canola



Determination of dockage

- Assessed in 2 stages
 - Normal cleaning procedures
 - Cleaning for grade improvement (max 5% loss)
- Use multiple sieves
- Goal
 - Removal of weed seeds and roughage
 - Minimum loss of whole, sound seed
 - Best Grade possible

Hand sieves

Round-hole sieves	Slotted sieves
No. 5	No. .028
No. 5.5	No. .032
No. 6	No. .035
No. 6.5	No. .038
No. 7	No. .040
No. 7.5	

Ascochyta in Lentils

- Fungal disease
- Processing problems
- Low volume of processed product



Ergot

- Fungal parasite
- Toxic if ingested
- Survives processing and baking (flour 470ppb – baked 255ppb)
- Aesthetics in noodles



Fusarium Head Blight

- Fungal infection
- Multiple strains
- Vomitoxin a toxic risk
- Destroys starch granules, protein and cell walls
- Reduces milling performance
- Weak dough properties



Mildew

- Non toxic fungal infection
- Darker flour and semolina color
- Aesthetically unappealing
- Year two of study
- No grading factor is immune to review

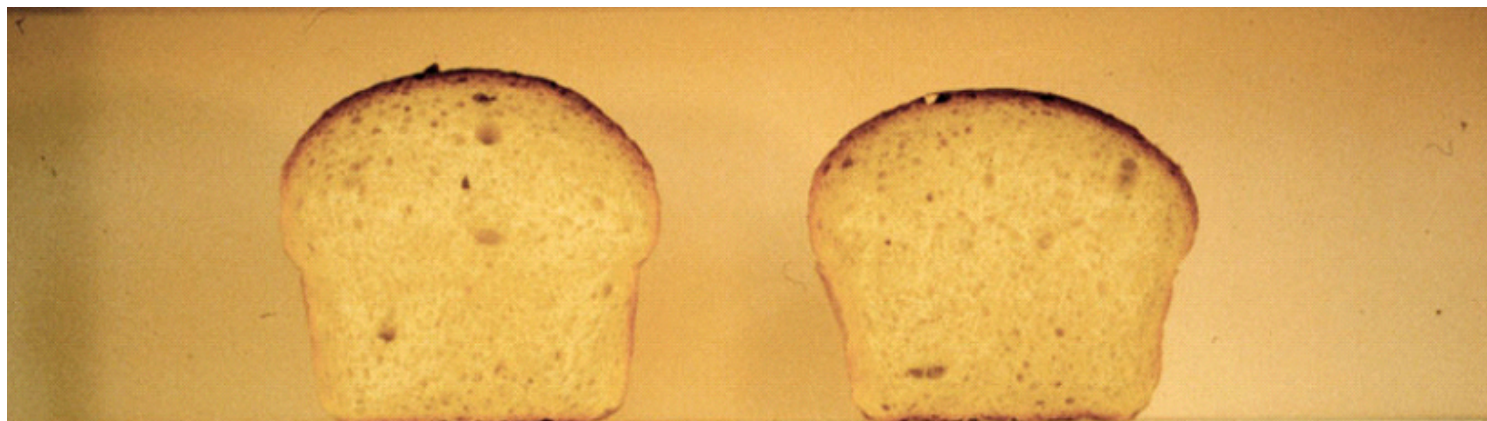


Frost/Heat Stress

- One of the most serious grading factors
- High molecular weight proteins deposited later in growing stage
- Harder to mill with increasing starch damage
- Ash content increases with severity

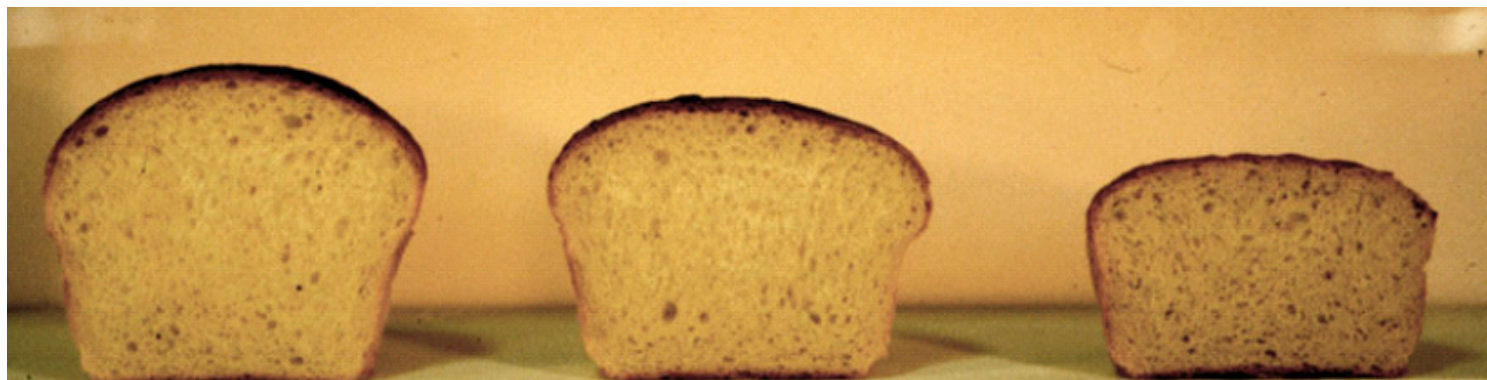


Frost damage effects on bread, using samples from Harvest Survey



No 3 CWRS

No 4 CWRS



'Good' Feed

Severe Frost

Extreme Frost

Sprout Damage

- Enzyme alpha-amylase degrades starch
- Enzyme is very potent
- Cosmetically bread will have dark crust due to sugars
- Bread becomes sticky and crumbly in consistency



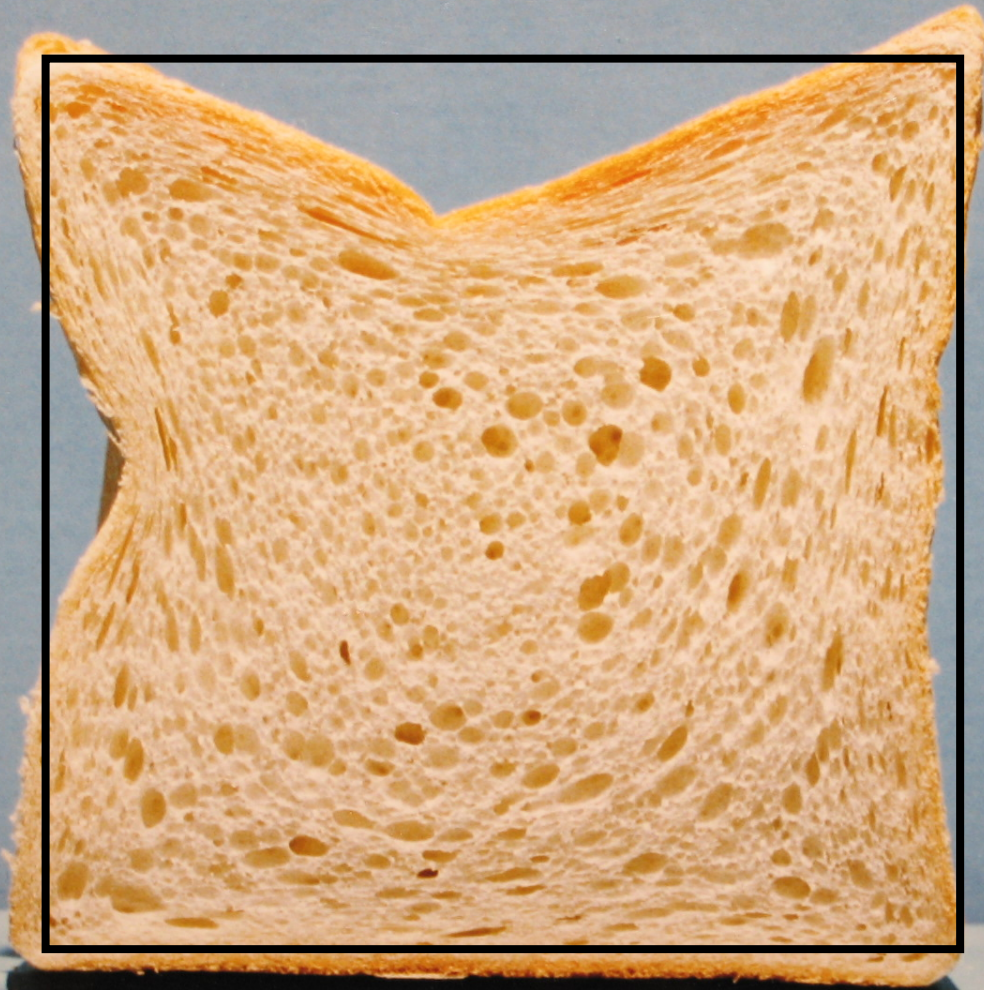
No sprout damage



10 cm



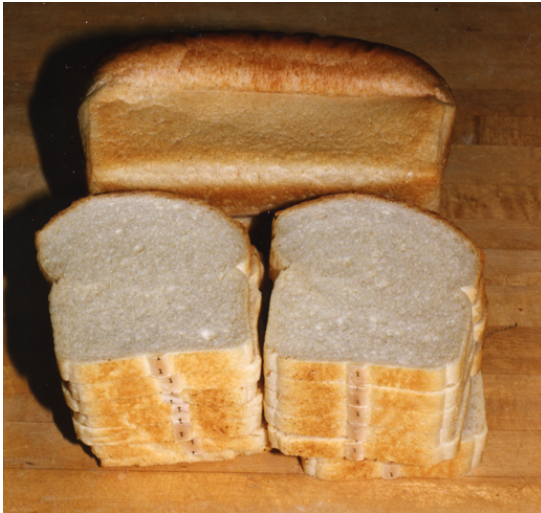
Sprout damage



10 cm

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Sprouted Wheat and Automated Processing



Sound:
cleanly sliced



Sprouted:
damaged by
slicer



Severely
sprouted:
loaf damaged,
slicer fouled



Wheat Class Modernization

Background for Modernization Proposal

- **The Canadian Grain Commission (CGC) has the authority:**
 - to designate a new or existing variety to a specific wheat class
- **The role of the CGC's variety designation lists:**
 - identify which varieties are eligible for each class re; declarations
 - keep ineligible varieties from undermining quality of grain shipments
 - facilitates the efficient handling for the industry
 - list is updated as new varieties are registered

Background for Modernization Proposal

- Customer concerns related to gluten strength has increased in last few years
- Gluten strength is a function of wheat's glutenin and gliadin proteins and is key to bakery processing, crumb structure and gas retention in a loaf



- Not all Canadian wheat varieties have the same protein components: Quality of protein just as critical as Quantity

The CGC proposed the following in CWRS/CPSR

- **Resolve the quality parameters of the CWRS and CPSR classes**
 - Tighten parameters to create a more consistent profile in classes
 - Maintain the mellowness and balanced functionality
- **Develop a new Canada Western milling class (CNHR)**
 - Allow farmers to go grow new high yielding varieties
 - Allow home for orphaned varieties from CWRS and CPSR
- **Implement variety transition processes**
 - Recognize the different needs of industry stakeholders
 - Recognize the needs of customers of Canadian grain
- **Other classes and Eastern classes to be reviewed at a later date**



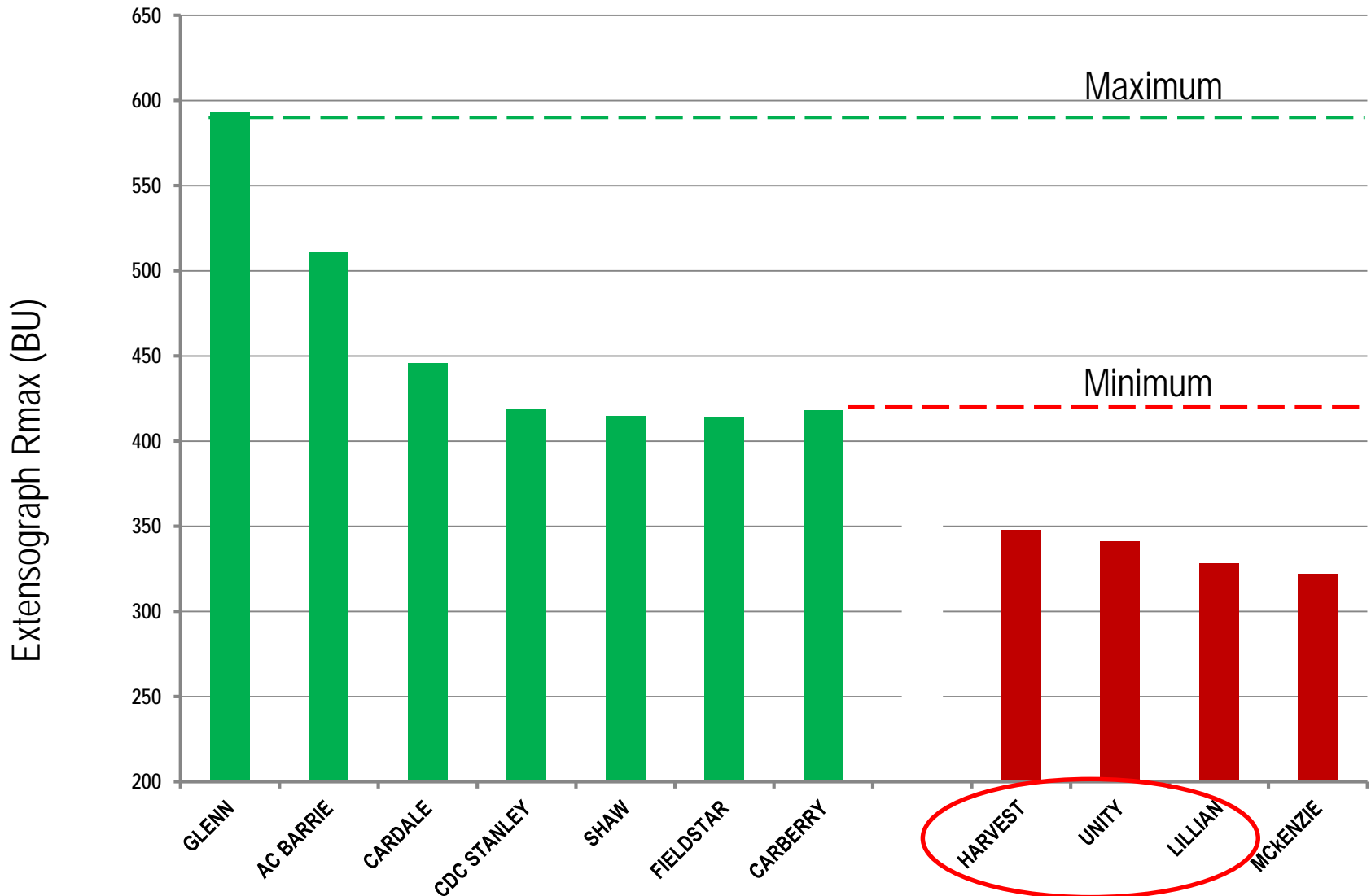
Resolve Quality Parameters for CWRS and CPSR Classes

Quality Parameters of the CWRS Class

- PRC-WRT adjustments to the quality checks
 - Candidates with gluten strength below Carberry will be removed from the CWRS class
 - Candidate cultivars with gluten strength above Glenn will be re-assigned to another class
 - Recognize different Parkland growing conditions

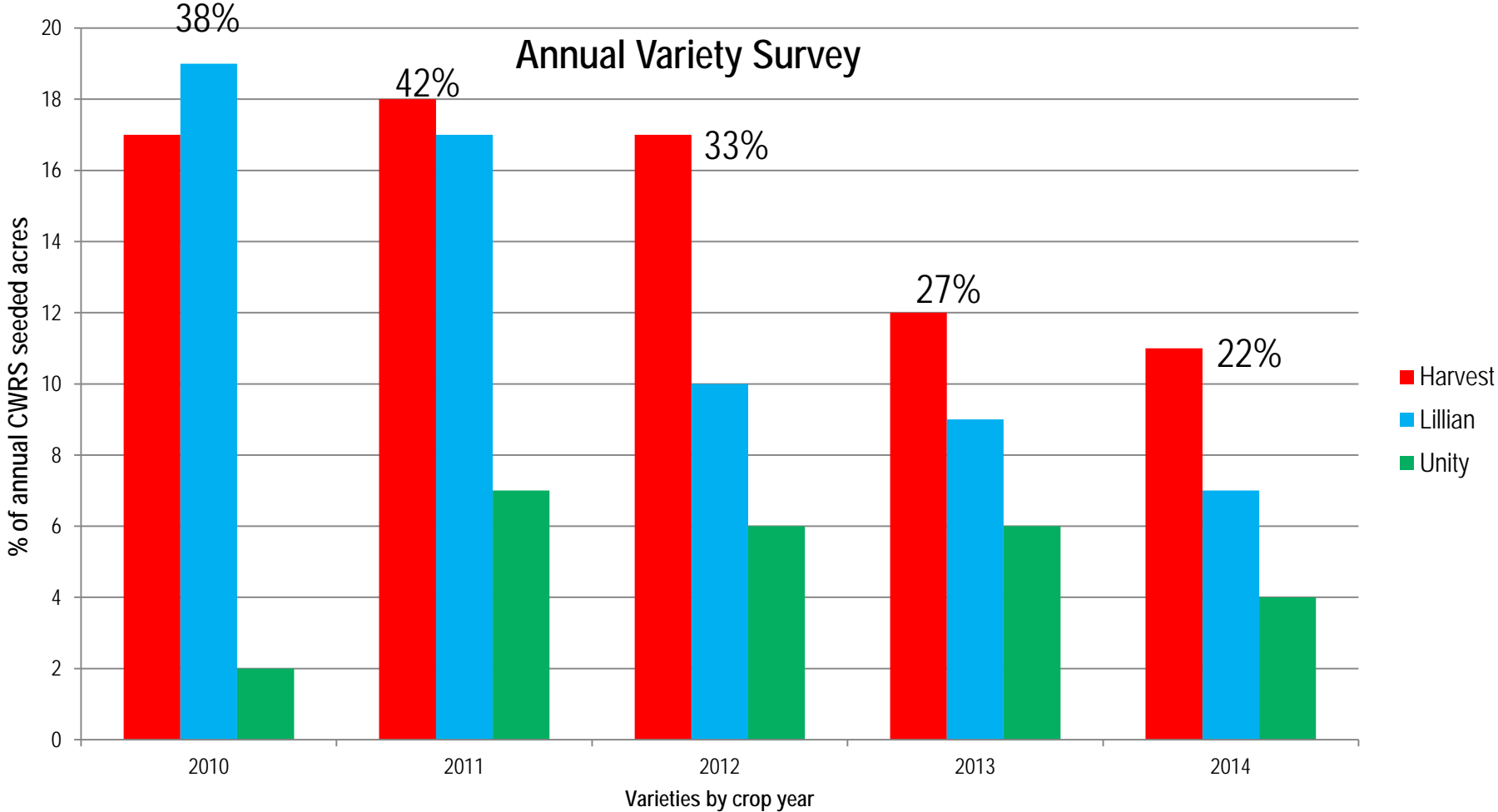
Gluten Strength	Western	Central	Park
High Maximum	Glenn	Glenn	Glenn
Medium Level	BW965	BW965	PT472
Minimum Level	Carberry	Carberry	Splendor PT772

Extensograph Rmax (BU) for CWRS Varieties Grown in the *Eastern Prairies* - 2014 Harvest



Seeded Acres

High number of acres grown of 3 specific varieties in CWRS class



Quality Parameters for the CPSR Class

- PRC-WRT adjustments to the quality checks
 - Strengthen the quality and consistency of the CPSR class and ensure new varieties meet requirements for milling performance, dough strength, protein quantity, water absorption and end products.

Gluten Strength	Variety
High	Glenn
Moderate to high	AAC Foray
Moderate to low	HY 537
Minimum level	5700PR



**Develop New Canada Western Milling
Class (Canadian Northern Hard Red)**

Develop a New Canada Western Milling Class (CNHR)

Outcome;

- Cultivars will have good milling quality and good water absorption, but lower gluten strength than both the CWRS and CPSR classes
- Protein content will span a broad range
- Implement *Faller*, *Unity*, and *Conquer* as the initial check varieties (PRC-WRT)
- Address changing customer requirements and farmers' desire to grow new higher yielding varieties
- Interim Wheat class temporary for 2015/16
 - Eligible varieties are *Faller*, *Prosper* & *Elgin ND*



Implement Variety Transition Process

Implement Variety Transition Process

1. If a variety no longer met new class quality objectives, a letter was sent to the owner indicating that the CGC is moving the variety to another class
2. If a variety has insufficient (extensograph) data then;
 - Owner will grow their variety for 2 years at 6 sites across western Canada against the new class check varieties
 - CGC will conduct analysis and provide the data to the variety owner after each year
 - After two years CGC will determine if movement is warranted
 - Varieties which were in the General Purpose class for which appropriate quality data is available will be reviewed and placed in Canada Northern Hard Red class if they meet the quality objectives of the class

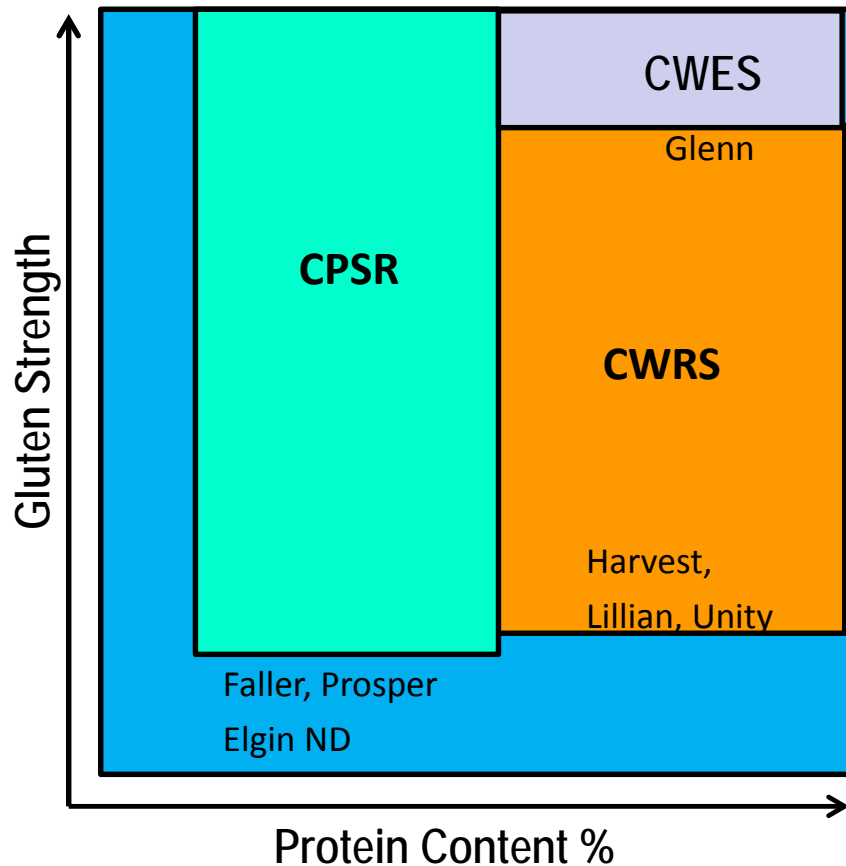
Varieties Designated to Another Class; August 1, 2018

CWRS	Represents	20% of current acreage	in 2015	
AC Cora	Alvena	Harvest		Neepawa
AC Abbey	Alikat	Kane		Park
AC Eatonia	CDC Makwa	Katepwa		Pasqua
AC Majestic	CDC Osler	Leader		Pembina
AC Michael	Columbus	Lillian		Thatcher
AC Minto	Conway	McKenzie		Unity
				5603HR
CPSR				
AC Foremost	AC Taber	Conquer		Oslo

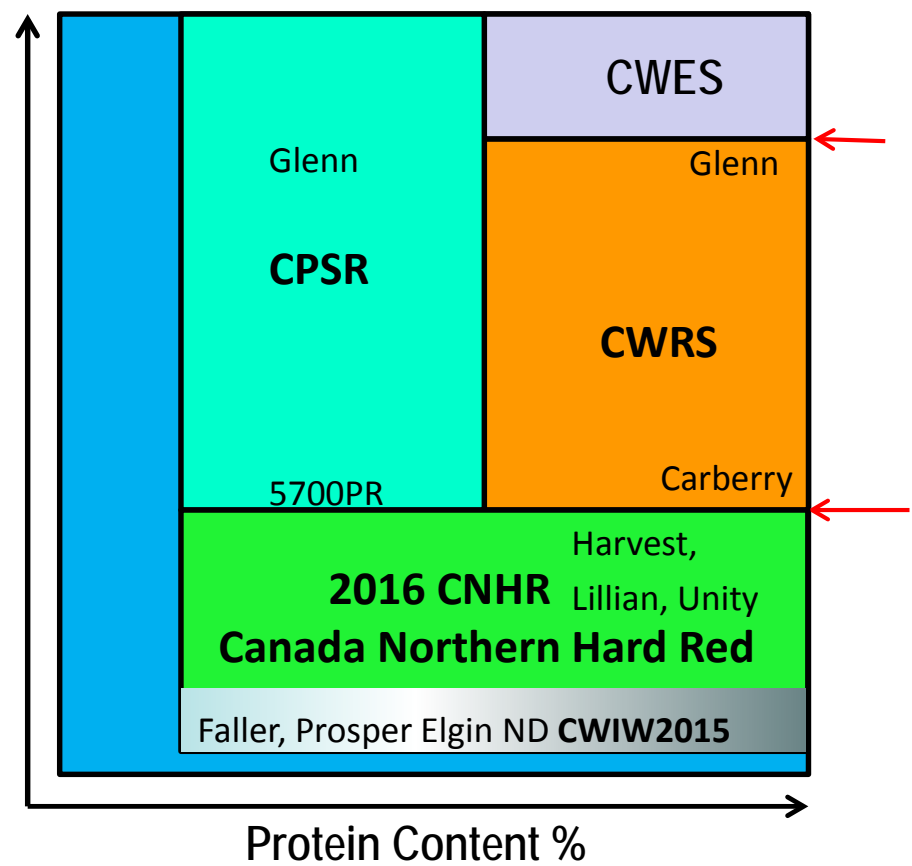
Varieties will be designated to another class as of Aug 1, 2018- may impact spring 2018 seeding intentions

Existing Class Profile (Gluten Strength vs Protein)

Current: Hard Red Spring Wheat Canada vs U.S.



Proposed: Hard Red Spring Wheat Canada vs U.S.



Note: U.S. HRS in blue, chart for illustration purposes only

Western Wheat Classes & Grades Today and August 1, 2016

CWAD	CWRS	CWHWS	CWRW	CWSWS	CPSR	CPSW	CWES	CWF	CWGP	CWIW
1	1	1	1	1	1	1	1		1	1
2	2	2	2	2	2	2	2		2	2
3	3	3	3	3	CW Feed	CW Feed	CW Feed			3
4	CW Feed	CW Feed	CW Feed	CW Feed						CW Feed
5								Removed Aug. 1,2016		
CWAD	CWRS	CWHWS	CWRW	CWSWS	CPSR	CPSW	CWES	CWSP *	CNHR **	
1	1	1	1	1	1	1	1	1	1	
2	2	2	2	2	2	2	2	2	2	
3	3	3	3	3	CW Feed	CW Feed	CW Feed		3	
4	CW Feed	CW Feed	CW Feed	CW Feed					CW Feed	
5								*Canada Western Special Purpose	**Canada Northern Hard Red	

Steps Remaining



- Implement Canada Northern Hard Red class and Canada Western Special Purpose classes effective Aug.1, 2016 with accompanying grade schedules.
- Proceed with transition process for varieties effective Aug.1, 2018
- General Purpose class eliminated (Aug.1,2016) however its varieties will now enter the Special Purpose class where no quality parameters are specified
- Canada Feed class will be eliminated (Aug.1,2016)
- Interim wheat class will be eliminated (Aug.1,2016)
- Ongoing discussions with value-chain stakeholders by communicating clear information and procedures to the entire domestic and international wheat value chain.

Canada 