IAOM: LATIN AMERICA – MEXICO CITY 2022

THE JOURNEY OF WHEAT IN CANADA

ENSURING QUALITY AND QUANTITY OF YOUR AGRICULTURAL PRODUCTS

WHEN YOU NEED TO BE SURE

SGS

BEGINNING OF LIFE

- Wheat breeding
  - Improve on agronomy, disease resistance and flour quality
  - Improve bake performance and demand
  - Industry expectations are strict and therefore takes time.
- Committee of industry experts evaluate new lines
  - Meet or exceed current standards for the wheat class?
  - Consistent performance over multiple years and growing regions?
  - Experts from supply chain vote to recommend or object.
- Quality focuses are:
  - Physical wheat characteristics
  - Milling performance
  - Dough/Gluten Strength
  - End-use quality
- Government agency ensures wheat class quality is maintained

WHEAT CLASSES IN CANADA

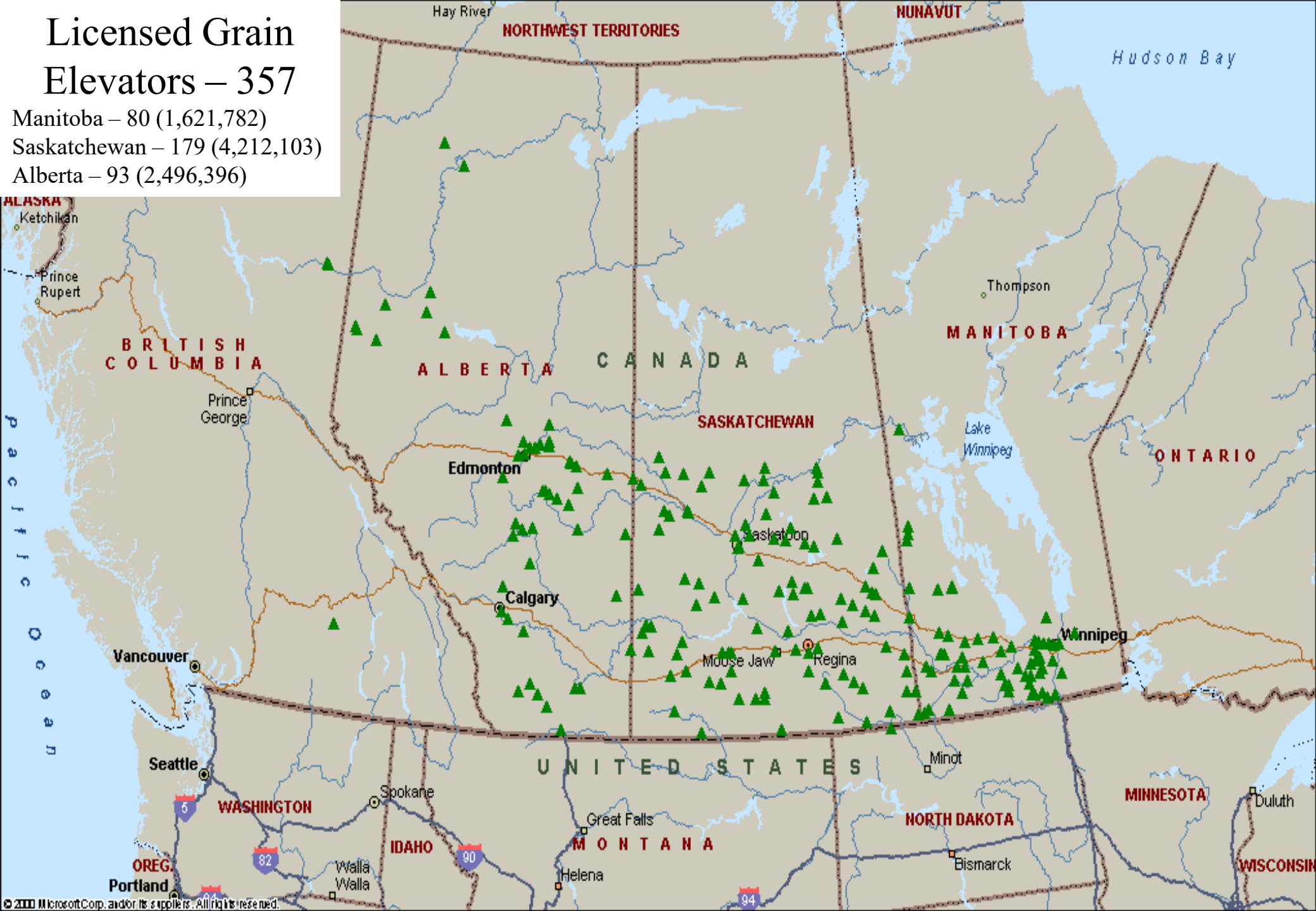
Wheat Class		% of wheat grown	Best for:
CWRS	CANADIAN WESTERN RED SPRING	68	Breads
CWAD	CANADIAN WESTERN AMBER DURUM	22	Pasta, couscous
CPS	CANADIAN PRAIRIE SPRING	4	Blending, flour yield
CNHR	CANADIAN NORTHERN HARD RED	2	Blending, cost?
CWSWS	CANADIAN WESTERN SOFT WHITE SPRING	2	Cakes, pastries
CWRW	CANADA WESTERN RED WINTER	1	Bread, steam buns
CWSP	CANADIAN WESTERN SPECIAL PURPOSE	1	High yielding
CWHWS	CANADIAN WESTERN HARD WHITE SPRING	-	"White" noodles, bread
CWES	CANADA WESTERN EXTRA STRONG	-	Blending

CROP QUALITY ASSESSMENTS

- Grain companies do new crop quality survey
  - What is the quality change from last year?
  - What are the differences regionally?
  - What can we assure for our customers?
- Wheat catchment area around each terminal assessed
  - Grade, quantity per grade, average protein content, disease, falling number, vomitoxin (DON)…
- Regional composites by grade and catchment formed for further quality assessment
  - Milling, flour physical properties, dough rheology, bake

Licensed Grain Elevators – 357

Manitoba – 80 (1,621,782)
Saskatchewan – 179 (4,212,103)
Alberta – 93 (2,496,396)



CROP QUALITY ASSESSMENTS

- WHY DO THEY INVEST THIS TIME AND EFFORT?
  - To understand what is available for their market
  - To know how to efficiently fill orders to meet quality specifications
  - To plan how to manage any challenges caused by wheat quality (ie. segregation, drying)
  - TO LET CUSTOMERS KNOW WHAT THEY CAN PROVIDE AND MAINTAIN UNIFORMITY UNTIL NEXT CROP

WHAT DO MILLERS EXPECT OF CANADIAN WHEAT?

- #3 Quality
- #2 Price
- #1 Uniformity/Consistency

- New crop quality survey is one way grain companies try to achieve quality expectation and uniformity
- What else?
  - **SGS ASSISTS THE GRAIN COMPANIES**

YUKON TERRITORY
NORTHWEST TERRITORIES
BRITISH COLUMBIA
Hay River
NUNAVUT
ALBERTA
Prince Rupert
Prince George
Edmonton
SASKATCHEWAN
MANATOBA
Vancouver
Calgary
Saskatoon
Regin
innipeg
ONTARIO
QUEBEC
LABRADOR
Septiles
Moncton
Quebec
Montreal (Mirabel)
Montreal (Dorval)
NEW BRUNSWICK
Halifax
Thunder Bay
Sault Ste.Marie
Sudbury
North Bay
Ottawa
Toronto
Hamilton
London
Sarnia
Windsor
Canadian National Railway
Canadian Pacific Railway
Regional / Shortline

WHERE WE ARE POSITIONED TO SERVE

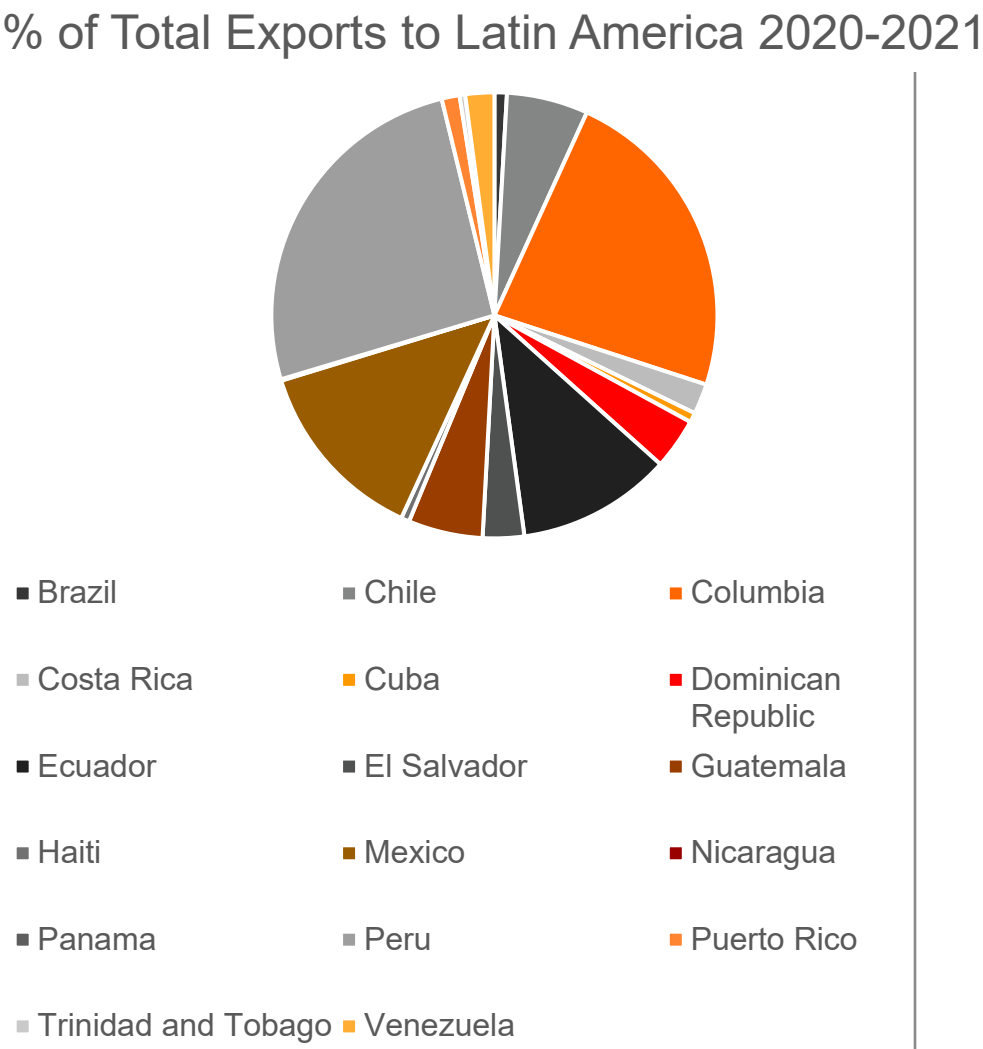
- All cereals and oilseeds
- Submitted to or/and sampled by SGS
- Inland and Ports
- Certified to Canadian and International Standards

SGS CANADA PROVIDES HELP

- Assess quality and assign a grade to harvest samples
- Grade at different logistical points
  - Loading inland
  - Unloading at port
  - Loading vessels
- Grade and test incrementally (every 2000 MT min.) and report Real Time to shipper.
- Recheck all increments upon completion of vessel, to ensure accuracy; form composite and examine to satisfy client expectation
- “Certify” cargo shipment as 3rd party independent and neutral

CANADIAN WHEAT SHIPMENTS TO LATIN AMERICA

Wheat (in '000 metric tonnes)	2020-2021 Crop Year	% of total exports to Latin America 2020-2021	2019-2020 Crop Year
Brazil	65.0	0.9%	84.2
Chile	408.8	5.9%	322.4
Colombia	1590.9	23.2%	1265.9
Costa Rica	153.2	2.2%	228.6
Cuba	47.5	0.7%	138.7
Dominican Republic	251.5	3.7%	319.6
Ecuador	769.4	11.2%	578.2
El Salvador	208.5	3.0%	9.6
Guatemala	372.8	5.4%	18.3
Haiti	38.5	0.6%	16.2
Mexico	922.6	13.4%	841.5
Nicaragua	10.2	0.1%	4.4
Panama	---	0.0%	16.8
Peru	1772.2	25.8%	1323.9
Puerto Rico	91.8	1.3%	55.1
Trinidad and Tobago	24.3	0.4%	---
Venezuela	143.6	2.1%	58.8
Total	**6870.8**		**5282.2**
Percentage of Canadian Wheat Exports to L.A	**35.0%**		**29.3%**



SGS GRAINS ANALYTICAL TESTING LABORATORY

- The GATL is a result of a joint venture between SGS and the Grain Farmers of Ontario.
- Current services offered:
  - Grain and flour analysis:
    - Protein, falling number, gluten, starch damage...
  - Dough testing:
    - Farinograph, Alveograph, Extensograph, ...
  - Product Evaluation
    - Baking – bread, cookies
    - Noodles
  - Use industry approved testing methods
  - Ability to mill wheat samples (Buhler Mill) into flour on a small scale but representative of large commercial mills.

INDUSTRY REACH

- Wheat breeders:
  - Early generation varieties
- Farmers:
  - “How much is my crop worth?”
- Grain elevators:
  - New crop quality survey
  - Vessel composite analysis – milling and baking
- Flour mills:
  - New crop quality survey
  - Vessel composite analysis – milling and baking
- Bakeries:
  - Supplier verification of test results.

DIFFERENCES AMONG WHEAT CLASSES

- Different classes of wheat for different purposes:

  - Each class has unique traits; some better for certain products than others.
    - Differences between varieties in each class
  - Soft Wheat flour – best for cakes, cookies, pie crusts, crackers.
  - Hard Wheat Flour – best for breads, croissants
  - Durum semolina – primarily for pasta

TESTS PER WHEAT CLASS

Hard Wheat:

-Farinograph
-Extensograph
-Alveograph
-Starch Damage
-Wet Gluten and Gluten Index
-Bread baking

Soft Wheat:

-Amylograph – viscosity
-Alveograph
-Solvent Retention Capacity
-Cookie bake test

Durum:

-Alveograph
-Wet Gluten and Gluten Index
-Colour – brightness, yellowness, redness

• Industry puts more weight on certain tests depending on which class it is from – correlate better to end use quality; better to distinguish differences between samples

WHY TEST VESSEL SHIPMENTS

- Awareness of quality variations between shipments
- Quality can vary between holds of a ship
- Prepare to adapt to variations
  - Segregate quality variations at receiving
  - Modify flour ingredients to adjust strength (ie. ascorbic acid)
  - Inform bakery clients of necessary baking adjustments
- For shipments originating from Canada, results can be available well before ship arrives to destination port.
- Composites obtained for grading would be divided down for milling and baking analysis.

WHEAT AND FLOUR QUALITY

CWRS QUALITY	CROP YEAR	
	2021	2020
Wheat:		
Protein (13.5% M.B), %	14.8	13.5
Falling Number, sec	378	385
Milling (Buhler Lab Mill)		
Yield (Total product basis), %	74.8	74
Flour:		
Protein (14.0% M.B), %	14.2	12.8
Wet Gluten. %	38.0	36.2
Gluten Index	91.9	87.9
Ash (14% M.B.)	0.45	0.51

DOUGH RHEOLOGY AND BAKE TEST

CWRS QUALITY (continued)	CROP YEAR	
	2021	2020
Farinograph:		
Absorption, %	65.1	66.9
Dough Development Time, min.	7.8	6.6
Stability, min.	12.4	9.6
MTI, BU	21	29
Alveograph		
P (height), mm	99	107
L (length), mm	129	116
P/L ratio	0.73	0.98
W - total energy, 10-4 J	461	396
Extensograph (45 min.):		
Resistance Maximum, BU	436	366
Extensibility, mm	234	201
Bake - Pup loaf:		
Bake loaf volume, cm3	1108	1089
Bake loaf height, mm	117	113
Specific volume, cm3/g	7.6	7.2

WHEAT AND FLOUR QUALITY

CWAD QUALITY	CROP YEAR	
	2021	2020
Wheat:		
Protein (13.5% M.B), %	15.6	14.2
Falling number, sec.	400	485
Milling (Quadromat Jr.):		
Yield - Semolina (Total products basis), %	70.1	71.0
Semolina:		
Protein (14% M.B.), %	14.3	13.1
Wet Gluten, %	39.3	37.4
Gluten Index	67.3	69.6
Ash (14% M.B.), %	0.62	0.68
Alveograph:		
P (height), mm	94	86
L (length), mm	96	95
P/L ratio	0.98	0.91
W - total energy, 10-4 J	298	254
Color (Minolta)		
L* (brightness)	85.13	85.19
a* (redness)	-2.34	-2.43
b* (yellowness)	30.26	31.54

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SGS AGRICULTURE & FOOD

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