



# CWB Laboratory – An Over View

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Marketing Strategy, Canadian Wheat Board



# Introduction...

- Innovation Place  
(328 -111, Research Drive,  
Saskatoon)
- Opened in August 2009



# Introduction...

- Lab Space – 850 sqft



- Storage Space – 1100 Sq ft

## CWB Lab Mandate...

- To provide CWB with timely, efficient and accurate information on crop quality and conditions
- To save farmers money
- Timely service (24 hours turn around for test results)

# CWB Commitment to Quality

- CWB runs a number of programs to monitor quality
  - On-Farm samples
  - Quality Scoop
  - On-site grading
  - Rail car load samples
  - Laker samples
  - Load increments
  - Vessel loading monitoring



# CWB Lab Testing programs...

- Harvest survey
  - **Start Aug 2009**

- Quality Scoop Program
- On Farm Sampling



# CWB Lab Testing programs...

## On-Farm

- Collection of new crop samples as soon as harvest occurs or the collection of new crop samples for those classes that are not immediately called into the elevator system

1. To collect as much information as possible about new crop quality as soon as available

2. To collect as much information as possible about new crop minor wheat classes



# CWB Lab Testing programs...

## QUALITY SCOOP

- Collection of new crop samples from western Canadian delivery points



To collect samples that are representative of crop quality produced in western Canada

# CWB Lab Testing programs...

Several other programs include –

- Lab analysis for on-site rail car program
  - Start Nov 2009
- Winter Rail / All-rail
  - Start Dec 2009
- Composite preparation and analysis
  - Start Aug 2009
- Fusarium trial analysis
  - Start Sept 2009



# CWB Lab Testing programs...

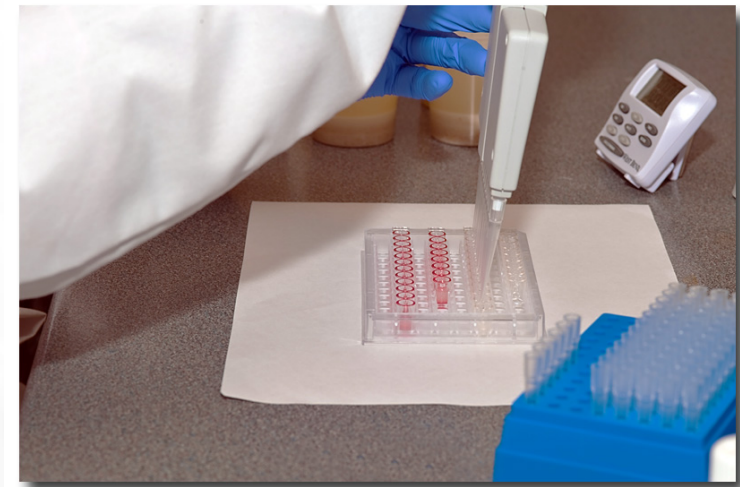
## Added programs in 2010 –

- Vessel - OTA increment samples
  - Start Oct 2010
- Barley analysis and germination
  - Start Aug 2010



# Lab testing procedures...

- Grading (Wheat and Barley)
- RVA / Falling number
- DON
- OTA
- Berlese (Entomology)
- Barley germination



# Grading...

- Grain Grading as per CGC Guide
- Protein
- Moisture



Travis Campbell



(L to R: Valar Gurusamy, Erin Matlock , Larry Michta)

- On farm & Quality scoop (Wheat & Barley)
- Composites
- All Rail / Winter Rail
- Fusarium trials, Company Samples
- Special class Wheat



# RVA Analysis...

- Falling Number
- Using Starch Master 1 & 2
- Performed on
  - On Farm
  - Quality Scoop
  - Rail Car Load samples
  - Winter Rail
  - Fusarium trials
  - Company samples



# Mycotoxins ...

- Primary Concern
  - Ochratoxin A (OTA)
  - Deoxynivalenol (DON) or Vomatoxin
- Lesser Concern in western Canada
  - Aflatoxin
  - Zearalenone
- Others
  - Ergot



# Mycotoxin analysis...

- DON - Vomitoxin – Deoxynivalenol: pink mould (*Fusarium graminearum*)
- OTA – Ochratoxin A – (*Penicillium verrucosum*)

➤ ELISA technique –

- Neogen Corp., USA, Enzyme kits



Shaker – Sample preparation

Limit of detection:

-0.1ppm for DON

- 0.1 ppb for OTA

# Mycotoxin analysis...

## Grinding of sample

- Perten Clean Mill
- 25-30 samples per hour
- Grinding capacity (300 -500 gm)



- Average time to run (DON /OTA)  
-2.5 hrs each

(weighing, preparation of sample & testing; excluding sorting and grinding of samples)



## Mycotoxin analysis...

- Maximum of 43 samples in one run
- 5 controls for each run to assess the validity of the test.
- DON - On Farm/ Quality Scoop, Rail Car samples, Winter Rail, Fusarium Trials, Company Samples
- OTA – Rail car, Winter Rail, Vessel & Laker samples



Shaker – Sample preparation

# Berlese funnel extraction – Entomology testing



- Monitoring stored grain for insect pest infestations
- If insect discovered – Type and growth stage of the insect reported to Logistics

**72 - 108 samples per day**

# Barley Germination...

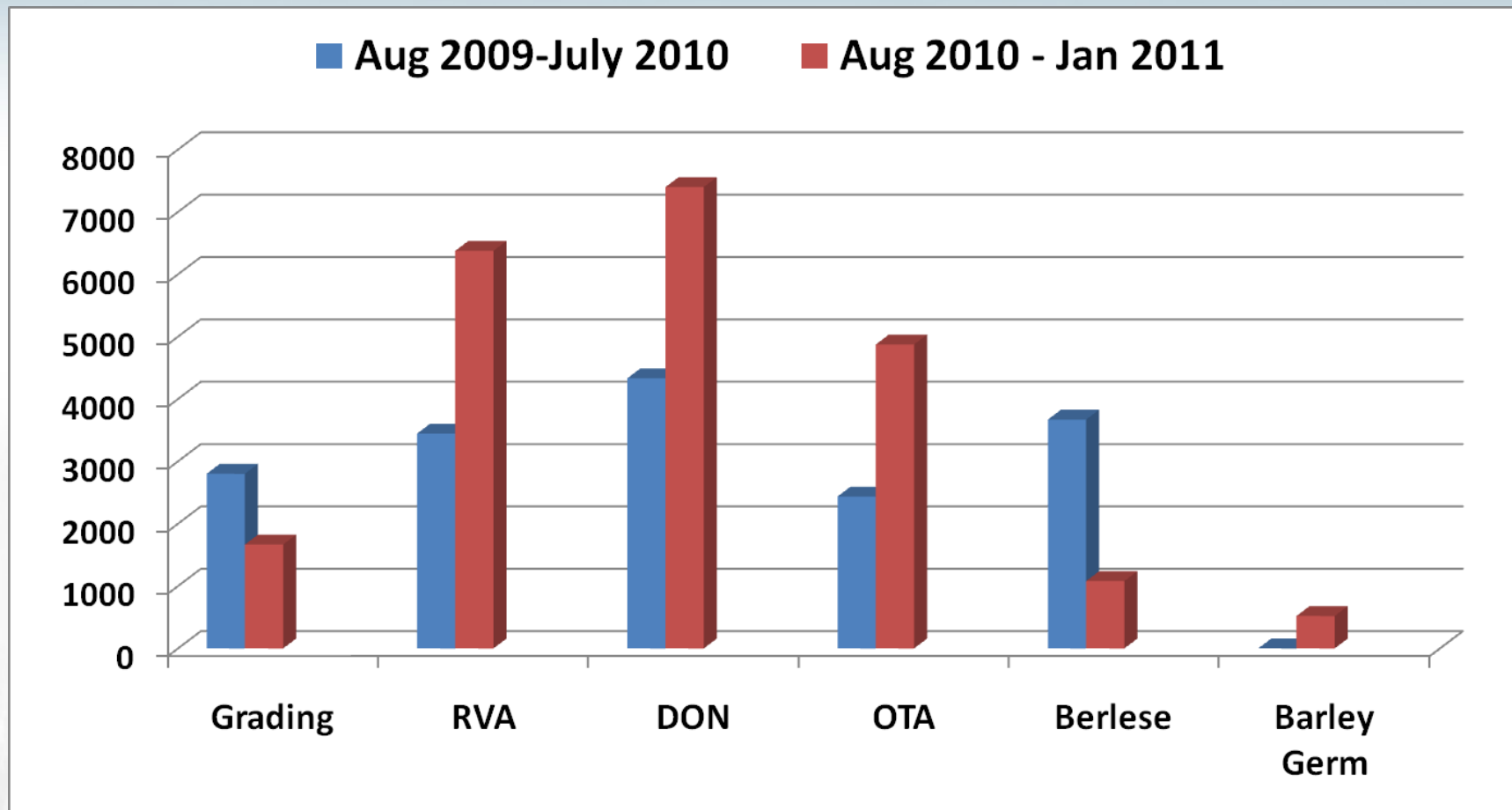
- Malt Barley
  - Barley Quality scoop and composite samples
  - high percent germination (95% and above) and vigorous growth
  - 400 seeds tested per sample
  - Germ Count after 72 hours and reported as %
  - Controlled Refrigerator for testing



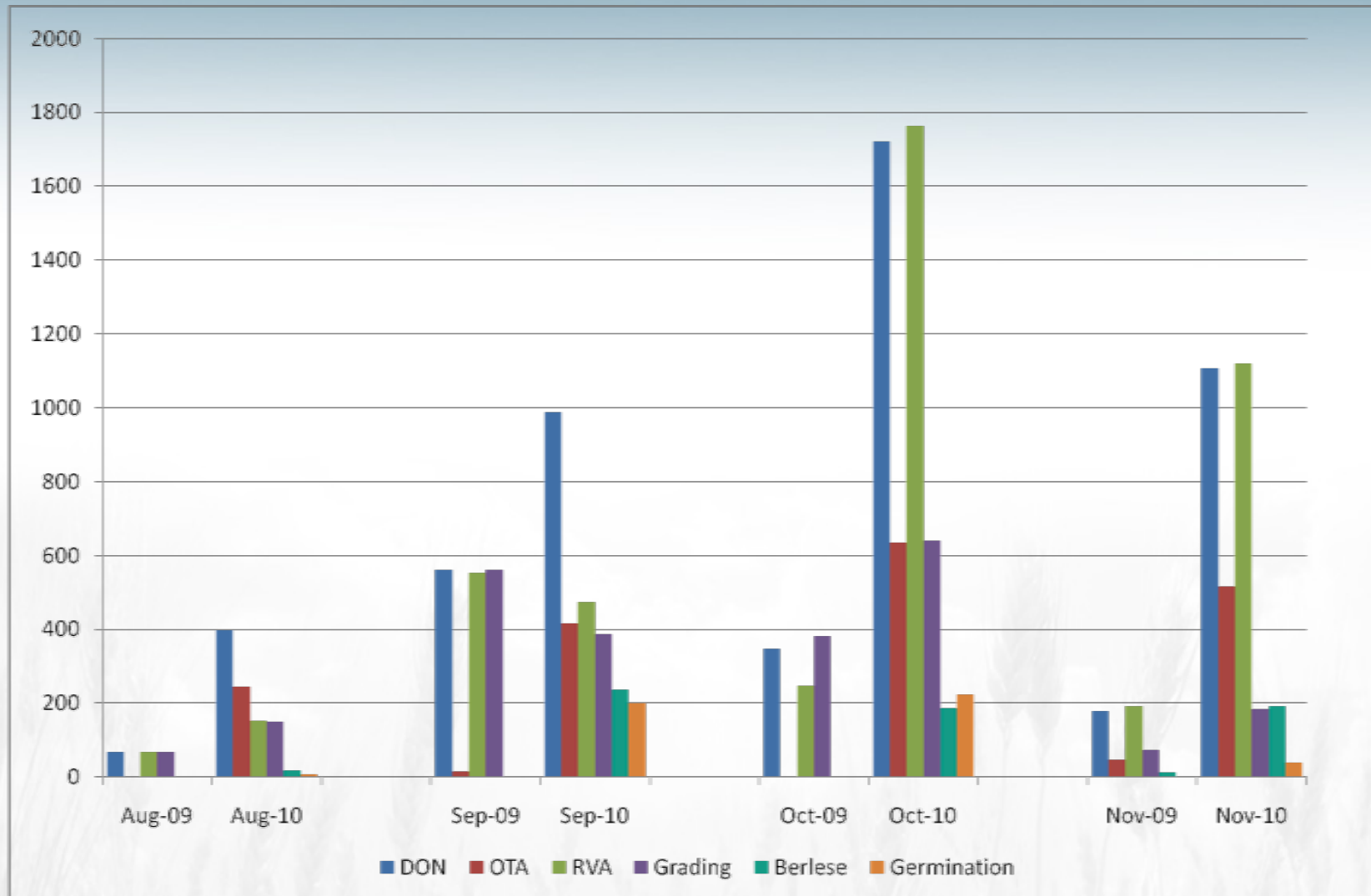
## Validation of tests ...

- ✓ **Moisture – CGC Check sample program**
- ✓ **Protein – CGC Check sample program**
- ✓ **DON – Neogen Corporation, USA and CII Laboratory, USA**
- ✓ **OTA - Triology Labs, USA; CII Lab, USA; enrolled in FAPAS for 2011**
- ✓ **RVA – CGC check service (2010); AACCC check sample service in 2011**

# Samples processed (2009 vs 2010)



# Comparison of sample volumes in 2009 & 2010 Peak season



# Lab efficiency...

- 2009 - 2010: 200 to 300 samples per week
- **2010- 2011: 100 -300 samples a day**
- 24 hrs turn around time maintained
- **Validation CWB Lab tests – positive**
- Staff member added in 2010

## Value of the Lab...

- Cost savings for CWB
- **Greater control over quality of grading and testing results**
- Greater control over timing of tests
- **Quicker information to Sales and Logistics**
- Timely and quick turn around from the lab results in improved logistics and higher prices

# Lab Staff...

- **Travis Campbell**  
**Grain Inspector**
- 22 years of industry experience
- Sask Wheat pool, Dover Mills, CGC and SGS



# Lab Staff

- **Erin Matlock**  
Lab technician
  - M.sc (Plant Pathology)
  - Previous experience with Novozymes and Sask Wheat pool



# Lab Staff

- Larry Michta
- Over 30 years of experience in Grain Industry
- Retired CGC Grain Inspector and Manager



**Thank You**

