

Laboratory Advisory Committee (LAC) Meeting

September 12, 2016

Le Centre Montreal Sheraton, Montreal, QUE, Canada

- 1. LAC meeting called to order by Chairman John Rhoads at 10:24 a.m.
- 2. The agenda was approved as distributed.
- 3. Hearing no opposition from attendees, John Rhoads appointed Steven Sievert to take minutes for the 2016 meeting.
- 4. It was moved, seconded and passed to approve the minutes from the 2015 LAC meeting as presented.
- 5. Steven Sievert, QCS Program Manager, provided a QC Program update (attached to minutes)
- 6. Julee O'Reilly provided a report on the activities of the MUN Task Force. (attached to minutes)
 - a. The task force met in Madison, WI, on July 28, 2016 with the goals of reviewing the current program participation, establishment of a proposal for MUN program tolerances, and identify support areas for the MUN program for DHI laboratories in general.
 - b. The task force made the following proposal for the MUN program:
 - i. Effective October 1, 2016 all DHI laboratories with instruments capable of MUN analysis and offering MUN service to their customers should report monthly samples unknown results for MUN. The actual performance as measured by MD and SDD will not affect the laboratory's certification status.
 - ii. Effective January 1, 2017, the following tolerances for the MUN program will be:
 - MD less than +/- 1.5 mg/dl MUN in three of the previous four trials
 - SDD less than 1.5 mg/dl MUN in three of the previous four trials
 - RMD less than +/- 0.75 mg/dl over the previous six trials
 - iii. It was moved, passed and seconded to approve the proposal from the MUN task force as presented and distributed to meeting attendees. (attached to minutes)
 - c. The task force also started initial discussions on BHB/ketosis proficiency testing. There was no proposal for a formal BHB PT program however key discovery actions were identified for BHB for information gathering.
- 7. There were no other changes to the *Auditing Procedures for Laboratories* proposed during the meeting.
- 8. John Rhoads was elected to serve another two-year term as LAC Chair by unanimous acclamation.
- 9. The meeting was adjourned at 11:45 a.m.

Recorded by:

Steven Sievert QC Program Manager Quality Certification Services Inc.



Laboratory Advisory Committee (LAC) Meeting

September 12, 2016 Le Centre Sheraton Montréal Hotel Montréal, QUE, Canada

- 1. Call to Order John Rhoads, Chair, LAC
- 2. Agenda Review and Repair
- 3. Appointment of Recording Secretary
- 4. Approval of Minutes from 2015 LAC Meeting attached
- 5. QCS Laboratory Program Update Steven Sievert, QCS
 - a. Review of Current Auditing Schedules attached
 - b. Samples Unknown Program
 - i. Late Submission of Data
 - ii. Data Entry Errors
 - iii. 2017 Unknowns Schedules
 - c. Questions on current version of Auditing Procedures for Laboratories
- 6. Old Business MUN Task Force Report Julee O'Reilly, DHI Cooperative Inc.
- 7. New Business
 - a. Proposed Changes to Auditing Procedures for Laboratories

b.

- 8. Election of LAC Chair John Rhoads, ELS is eligible for another 2-year term
- 9. Adjourn



<u>Laboratory Advisory Committee (LAC) Meeting</u> September 14, 2015 Embassy Suites Hotel, Syracuse, NY

- 1. LAC meeting called to order by Chairman John Rhoads at 8:35 a.m.
- 2. The agenda was approved as distributed.
- 3. Hearing no opposition from attendees, John Rhoads appointed Steven Sievert to take minutes for the 2015 meeting.
- 4. It was moved, seconded and passed to approve the minutes from the 2014 LAC meeting as presented.
- 5. Steven Sievert, QCS Program Manager, provided a QC Program update (attached to minutes)
 - a. Current auditing schedule distributed and discussed.
 - b. 2016 Samples Unknown schedules for component and ELISA laboratories were distributed.
 - c. Update on the Samples Unknown programming.
 - d. Review of procedural steps following on-site laboratory audits.
 - e. Report on the late data submission by laboratories.
 - f. Discussions on data entry errors in the Samples Unknown program.
 - g. Review of the approved protocol for new instruments and components.
 - h. Update on MUN program.
- 6. During the 2014 meeting, Steven Sievert reported that here are no clearly defined tolerances for accuracy or repeatability for MUN in the audit guidelines. Further, there have been requests from laboratories on guidance on MUN performance and from outside parties on the data quality. Finally, it was agreed that this would enhance the value of the MUN program.
 - a. A subcommittee of John Rhoads, ELS, and Julee O'Reilly, DHI Cooperative Inc., volunteered to work with Steven Sievert on development of a MUN program proposal, however this work was not completed prior to the 2015 LAC meeting. Carol Decker, NorthStar Cooperative Wisconsin, volunteered to join the MUN subcommittee. (Note Muril Niebuhr, Minnesota DHIA Zumbrota, also volunteered to join the MUN subcommittee after the meeting was adjourned). Additional expertise may be solicited in this work area and Steven Sievert will present a draft proposal at the 2016 LAC meeting.
 - b. Discussion on the suitability of both the unknown and calibration sets for MUN was brought to the floor. Dave Barbano, Cornell University, also shared with the group the work by the MMA using an enzymatic colorimetric method as a replacement for CL-10 as a reference method for MUN. The MUN subcommittee was encouraged to consider these comments in their proposal.
- 7. There were no other changes to the *Auditing Procedures for Laboratories* proposed during the meeting.
- 8. The meeting was adjourned at 9:32 a.m.

Recorded by:

Steven Sievert QC Program Manager Quality Certification Services Inc.



DHI Component Laboratories - 2017 Samples Unknown Schedule

Batch Number	Week Startin	<u>g</u>
230	January 9	
231	February 13	
232	March 13	
233	April 10	
234	May 15	One week later – IDF/ISO Analytical Week, Madison May 8-12, 2017
235	June 12	
236	July 10	
237	August 14	
238	September 1	1
239	October 9	
240	November 13	3
241	December 11	

Centering Period Months for Laboratories – Even Years

Laboratories are subject to biennial, on-site audits. Below is a schedule of target months for the on-site audits scheduled to occur during even-numbered years.

January
February
March
April
August
September
October

Centering Period Months for Laboratories - Odd Years

Laboratories are subject to biennial, on-site audits. Below is a schedule of target months for the on-site audits scheduled to occur during odd-numbered years.

	Southeast Milk, Inc. Tennessee DHIA
	AgSource Cooperative Services/CRI – Menomonie Laboratory Barron – Washburn DHIC Marathon County DHIA
	Tillamook DHIAWillamette DHIAWashington State DHIA
December	

Auditing of MUN Instruments for Samples Unknown

Calibration Check Frequency

Samples with unknown results must be analyzed and reported on a monthly basis.

Calibration Check Procedure

On a monthly basis, the laboratory must purchase duplicate sets of 12 samples from a supplier designated by the auditor. The samples must be analyzed and the following data submitted to a predetermined site by a deadline determined by the auditor.

- 1. The sample analysis results, and
- 2. The supplier and set number of the last calibration samples.

The auditor will compare the transmitted results to those determined via reference methods and will report the findings back to the laboratory.

Acceptable Readings for Calibration Checks

The mean percent difference must not exceed 1.5 mg/dL (mg%) and the standard deviation of differences must not exceed 1.5 mg/dL (mg%) in three of the previous four trials.

The rolling mean percent difference over the previous six trials must not exceed 0.75 mg/dL (mg%).

Response to Calibration Check Failures

If an instrument fails to meet the established tolerances, it will be decertified immediately and must not be used for generating component results to be used in the *Genetic Evaluation Program* until the problem has been identified, corrected, and recognized as such by the auditor.

In some cases, the laboratory may be required to demonstrate acceptable performance via the analysis of a second set of Samples Unknown.



QCS Laboratory Program Update

Steven Sievert Manager, Quality Certification Services, Inc. Technical Director, National DHIA





Kevin Ladiski 1977-2016











Housekeeping



General Auditing Guidelines

- Service providers are required to notify the auditor of:
 - □ Changes in business name, address, phone, email, contacts
 - □ Changes in authorized personnel i.e. laboratory managers, contact person
 - □ Changes in equipment/instrumentation
- Notification within 30 days of change.
- Changes should be sent to QCS Program Manager Steven Sievert, not to the Laboratory Auditor.
- Assures accuracy in billing for laboratory fees and samples unknown component fees, website listings, and monitoring instrument performance.



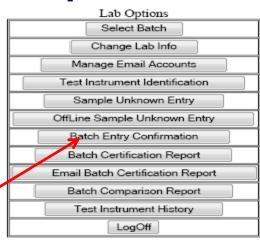
Renaming of Instruments/Line Identification

- Notify QCS Program Manager (Steven) of desire to rename instrument:
 - □ Has to be done by QCS staff to merge history files. If only the name is changed, the Samples Unknown website, it will create a new instrument and start a new history file.
 - □ Please make changes prior to Samples Unknown test week, not during the week. Process takes time and QCS Manager is not always available depending on audit schedule.
 - □ Current program does not allow certain characters to be used in naming such as #, &, @, +.:, *, and %. Please do not use FT+ or Line #2.
- QCS will link the history files and email confirmation to laboratory.
- Enter data as normal during the next Samples Unknown trial.



Notification of Certification Reports

- QCS moved Samples Unknown database to new server in June 2015.
 - □ All unknowns data and reports are secure.
 - Compatibility of new server software with old programming with emailing of certification reports is an issue. The email creates certification report with data through June 2015.
 - □ Please login into Samples Unknown site to retrieve your certification report.
 - □ Select the correct batch from the drop-down list of monthly trials





On-Site Audits



Laboratory Auditing Schedules

Auditing/centering month schedule is periodically updated to reflect the current DHI laboratories.

- Updates are published on QCS website when changes occur.
- QCS works to have a balanced audit schedule for Paul Sauvé.
 - **□22 laboratories in even-numbered years**
 - **□22** laboratories in odd-numbered years
 - □Current centering month schedules in handout



Availability of Samples During Audit

- Laboratory <u>MUST</u> have samples to run the day of the on-site audit. If there
 are no samples available, the on-site audit will be terminated and will have
 to be rescheduled.
- Laboratory is responsible for all costs (time and travel) associated with the subsequent audit.
- Will negatively affect your certification status (i.e. Provisional).
- Note that the certification expiration date cannot be extended and the auditor's schedule may push subsequent audit date past the existing expiration date. The net result is decertification of the laboratory until the on-site audit can be completed. Decertified laboratories may not send data to the CDCB.



Noncompliant Items from Previous Audit

It is normal that certain noncompliant items identified during the course of the on-site audit are designated with a completion timeline of 'by the next audit'

- If a laboratory fails to address these noncompliant items by the subsequent audit, the laboratory will have its certification status changed to 'Conditional.'
- May bypass the 'Conditional' status if additional serious noncompliant issues are identified during the course of the subsequent audit.
- The auditor will recommend to QCS a time-frame for completion that will not exceed six (6) months.
- Failure to address these items within the time-frame designated will result in the laboratory certification status to be changed to 'Provisional.' If a laboratory continues to fail to address the noted noncompliant issues, the laboratory may be decertified.



After your laboratory audit...

- 1. Paul Sauvé will provide a summary list to laboratory with noncompliant items, usually before leaving the laboratory.
- 2. Paul Sauvé will send the summary, full audit report, and a certification status recommendation to QCS for review. The laboratory auditor does not determine certification status.
- 3. QCS will review the recommendation along with payment history, on-time submission requirements, and other compliance factors.
- 4. QCS will prepare a summary letter and full report and will send to the laboratory manager, general manager and board president (as applicable).
- 5. QCS will update the website with certification status.
- 6. QCS will place follow-up items on calendar based on timetable (30 days, 6 months, etc.) as stated in the audit report.
- 7. QCS and Paul will work cooperatively to secure required follow-up if a laboratory does not respond in a timely fashion.
- 8. Failure to respond, either partly or fully, will negatively affect your certification status.



Samples Unknown



Review of Monthly Samples Unknown Results

During the analysis of the . QCS Samples Unknown trial, lab auditor Paul Sauvé made the following comments regarding DHIA laboratory.

1	Fat	MD out in two of last three	Recommend contact with
		trials. July MD=.079.	lab regarding this issue.

Please review internally and then provide feedbacks and steps taken to correct these issues on or before

Please include both Paul and myself on this communication.

Best regards, Steven

Steven Sievert

Manager, Quality Certification Services
Technical Director, National DHIA & DHIA Services







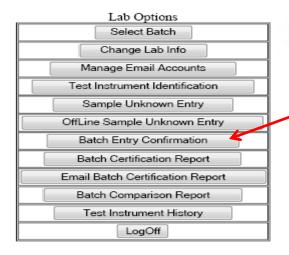
<u>Samples Unknown – Data Entry Errors</u>

- Huge increase in number of data entry errors in Samples Unknown:
 - Transpositions 3.18 instead of 3.81
 - Minor data entry errors 4.30 instead of 3.30
 - Switching rows & results i.e. protein & MUN switched
 - Major data entry errors entered the wrong data (previous months data, total protein instead of true protein, or wrong instrument)
- Paul and Steven correct obvious errors but should we?
- Batch entry confirmation report is available each laboratory should print and double check the data entered. It is your proof of submission.
- Corrected data is late data as agreed upon during 2013 LAC Meeting



Batch Entry Confirmation Report

Batch Entry Confirmation



Alpura Delicias Delta CombiScope				
FTIR				
	Fat	Pro	SCC	MUN
	Rep1 Rep2	Rep1 Rep2	Rep1 Rep2	Rep1 Rep2
	1 2.810 2.840	2.970 2.980	41 43	13.90 15.40
2	2 3.530 3.550	2.890 2.880	441 441	12.20 12.30
	3 3.670 3.700	3.020 3.000	165 171	13.70 14.50
-2	4 4.530 4.570	2.890 2.870	258 252	8.30 9.10
5	5 4.950 4.980	2.870 2.860	192 198	11.10 12.70
	5 4.110 4.130	3.250 3.250	315 315	14.70 15.20
	7 3.950 3.940	3.630 3.610	1,219 1,224	11.10 10.80
	3 4.280 4.280	3.180 3.180	107 113	11.80 12.80
	3.860 3.860	3.020 3.020	207 218	14.20 14.60
10	3.330 3.340	2.810 2.800	459 484	16.10 16.80
1.	1 3.410 3.420	2.810 2.820	249 238	21.50 21.90
12	2 4.030 4.030	3.240 3.240	263 248	17.50 16.20
Hash Total	s 46.460 46.640	36.580 36.510	3,916 3,945	166.10 172.30



<u>Samples Unknown – Data Entry Errors</u>

During the review of the July 2014 Samples Unknown trial, Paul Sauvé noted the following data entry error for DHIA.

• In reviewing the July samples unknown, I discovered a data entry error in your results – L2, FAT, Sample #11 changed from 3.43 to 4.43.

Previous data entry errors during the last twelve months for DHIA have been noted in the following samples unknown trials:

- May 2014
- September 2013
- August 2013



Late Entry of Samples Unknown Results

- Laboratory Guidelines changed in 2009 any laboratory submitting data late (unexcused) twice or more in a 12 month period will have certification status changed to provisional.
 - 9 laboratories have been made provisional since implementation
 - 18 laboratories have 'one strike' today



Late Entry of Samples Unknown Results

What is Valid?

Acceptable Reasons

- □Instrument problems
- □Waiting on parts and/or manufacturer technician to arrive
- **□Samples** arrived spilled or out of condition
- **□Samples arrived late**

Unacceptable Reasons

- □Vacation
- □Forgot the samples were in the cooler
- □Did not get around to running the samples
- □Forgot to enter the results
- □Ran out of time on Friday



Adding New Instruments & Components



Procedure for New Instruments

- Notify QCS Program Manager of new instrument:
 - Make, Model and In-Service Date
 - Components to be analyzed
 - Instrument to be taken off-line (if applicable)
- Laboratory adds instrument on Samples Unknown website.
- Documentation Required
 - Manufacturer training is required and subsequent documentation sent to the QCS Program Manager
 - Analyze one set of 'special' unknowns with results sent to QC Program Manager and Paul Sauvé.
 - Perform appropriate and routine QC checks with calibration checks, hourlies and dailies for the first three weeks of operation with results sent to Steven & Paul.



MUN Update



MUN Program Tolerances

- Multiple requests to define tolerances for MUN in the Samples Unknown program
 - Laboratories with new instruments desire direction
 - Third parties using MUN data would like an assurance of accuracy
 - Support and marketing of MUN program

Hello Steven, I am a nutritionist in Visalia, California and I have a client considering testing for MUN's. I have stayed away from this as we have not had access to a lab that could do wet chemistry analysis for MUN's on a large scale. My question is: Has the NIR technology improved in recent years to improve the accuracy of measuring MUN's vs wet chemistry?

Any insight you can provide is greatly appreciated. I think I can do more with MUN on individual cows than what I get from their processor.



MUN Task Force

MUN Task Force met on July 28, 2016, in Madison, WI.

 I would like to ask Julee O'Reilly, DHI Cooperative Inc., to present a summary of the MUN Task Force meeting and its recommendations.



QCS MUN Task Force Report

Julee O'Reilly Laboratory Manager DHI Cooperative Inc.



Background



Why a Task Force on MUN Tolerances?

- Multiple requests to define tolerances for MUN in the Samples Unknown program
 - Labs with new instruments desire direction
 - Third parties using MUN data would like an assurance of accuracy
 - Support and marketing of MUN program

Task Force was established at the 2014 LAC Meeting with volunteer participation



MUN Task Force Goals

- Review of current program and participants
- Review composition of the Samples Unknown PT set
- Review of MUN program in Canada
- Review of instrument capabilities
- Proposal for MUN tolerance for MD, SDD and RMD
- Plan to encourage greater laboratory participation in MUN program and dairy producer analysis of DHI samples for MUN



MUN Task Force Meeting Participants

John Rhoads, ELS & Chair, LAC
Julee O'Reilly, DHI Cooperative
John Tauzel, Dairy One Cooperative
Carol Decker, NorthStar Cooperative
Joel Amdall, AgSource Cooperative
Muril Niebuhr, Minnesota DHIA
Glenn Schmahl, Eastern WI DHIC
Dona Winter, Eastern WI DHIC

Tod Schilling, Bentley Instruments Roman Kwasiborski, FOSS North America Terry Allen, Perten-Delta Instruments Tim Kaeding, Perten-Delta instruments

Steven Sievert, QCS Program Manager Jay Mattison, CEO, National DHIA/QCS George Cudoc, Chair, QCS Advisory Committee

Task Force met on July 28, 2016, in Madison, WI.

Additional comments were provided by Paul Sauvé via email as he could not attend the meeting in person.



Where at We Now?



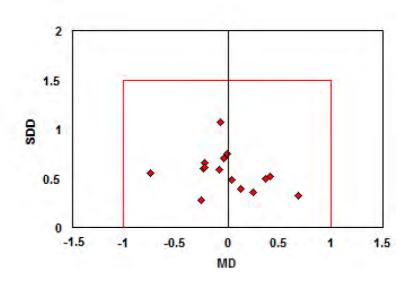
Composition of Current Samples Unknown Set

- ELS provides monthly Samples Unknown samples to US, Mexico, and Canada
- Bulk tank milk is sourced and comingled
- 24 samples
- Range of 5-20 mg/dl MUN is goal with weighting in the 10-14 mg/dl range
- Occasionally certain samples are 'spiked' with urea to get high MUN samples
- Reference test is CL-10 average of three results from AgSource, ELS, MMA



Current Program in Canada

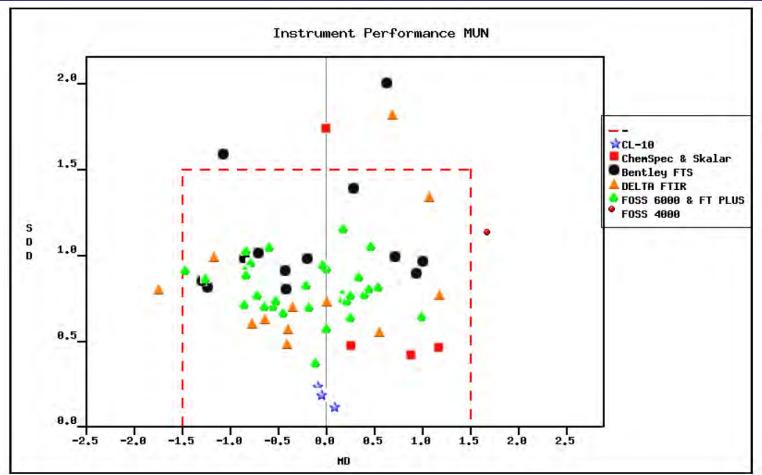
INS#	MD	SDD	SDA	S
#211	-0.74	0.55	0.54	0.62
#206	-0.26	0.28	0.35	0.30
#207	-0.24	0.61	0.90	0.64
#209	-0.23	0.66	0.30	0.44
#202	-0.22	0.61	0.97	0.67
#201	-0.09	0.59	0.81	0.58
#208	-0.07	1.07	0.28	0.64
#214	-0.04	0.71	0.75	0.59
#212	-0.01	0.75	0.81	0.64
#204	0.04	0.49	0.66	0.47
#203	0.13	0.40	1.08	0.67
#210	0.24	0.36	1.13	0.70
#213	0.36	0.50	0.60	0.50
#205	0.41	0.52	0.84	0.62
#215	0.69	0.32	0.51	0.53
11111	F-1-1-7		Mean	0.57



- 15 Canadian laboratories submitting MUN data monthly using QCS Unknowns
- Current program tolerances of +/1 mg/dl MD and 1.5 mg/dl SDD



August 2016 MUN Performance of Instruments





Proposed Actions and Changes to QCS Auditing Guidelines



Laboratory Program Participation

Effective October 1, 2016

All laboratories with online instruments capable of MUN analysis and offering MUN to dairy producers are to report MUN results as part of the QCS Samples Unknown Program.

- Performance results will be available but will not affect certification status
- Allows time for instrument calibration for MUN
- Allows time to seek support from manufacturers



Proposed MUN Tolerances

Effective January 1, 2017

MUN will become a part of the *Auditing Procedures for Laboratories* with the following performance criteria:

- MD not to exceed +/- 1.5 mg/dl in three of the four previous trials
- SDD not to exceed 1.5 mg/dl in three of the four previous trials
- RMD not to exceed +/- 0.75 mg/dl over the previous six trials
- All instruments submitting MUN data will start with a clean history on January 1, 2017.
- Includes infrared instruments and Chemspecs



Effect of Proposed Tolerances

- Based on August 2016 results, 6 of 83 instruments reporting MUN would be out of tolerance (remember – each laboratory will start with a clean history in January 2017).
- Would only apply to instruments in US and Mexico there would be no change to current program in Canada.
- Performance criteria may be reviewed at a future date, possibly to match Canadian performance criteria.



MUN Program Support

The MUN Task Force encourages National DHIA/QCS to support the MUN program with information on DHI laboratory participation in monthly proficiency testing and the implied accuracy of MUN data from individual cow milk samples routinely collected on test day.



Other Topics of Discussion - BHB



<u>Is a Proficiency Program for BHB Needed?</u>

The task force discussed the potential for a PT program for BHB

Identified challenges include

- Most likely more than 24 samples will be required
- Need to identify reference test laboratories and procedures
- Need to identify range of BHB to be represented in sample set
- May not be monthly could be a quarterly PT test

Recommendations from the Task Force

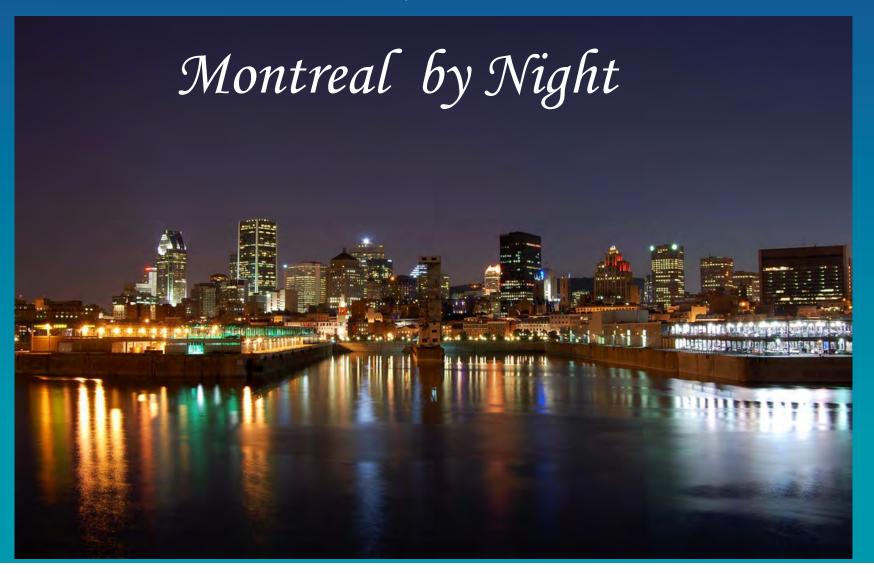
- Monitor IDF as to potential standards for ketosis testing
- Consider development of protocols for instruments and for data capture
- Ask Valacta to consider periodic Skalar analysis of current samples unknown set to determine existing BHB levels and range.



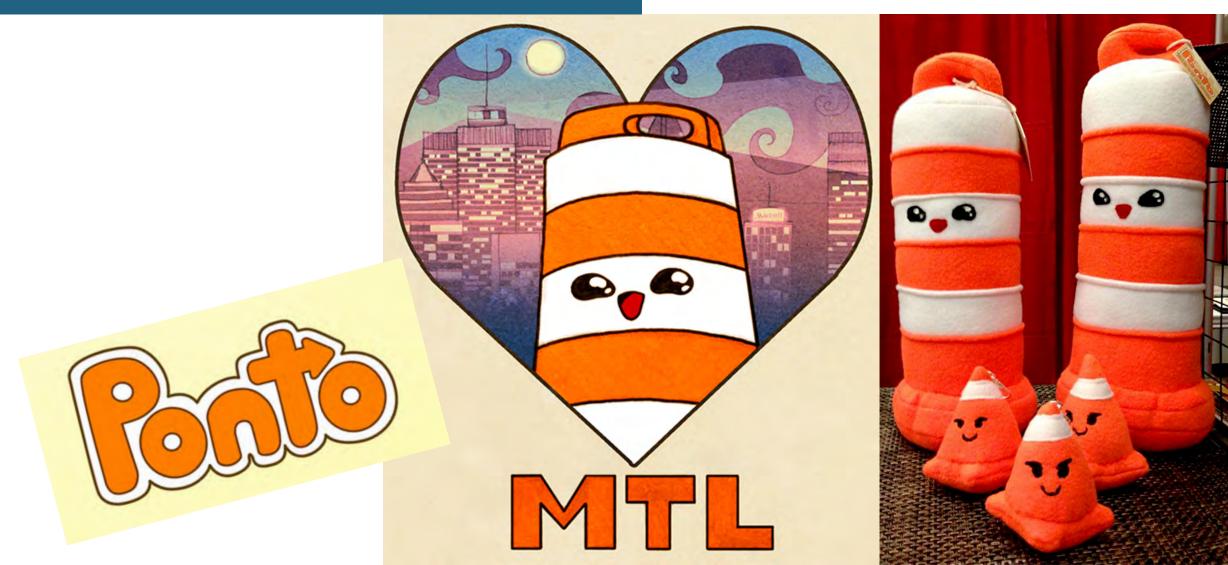
Bienvenue NALMA 2016 Welcome

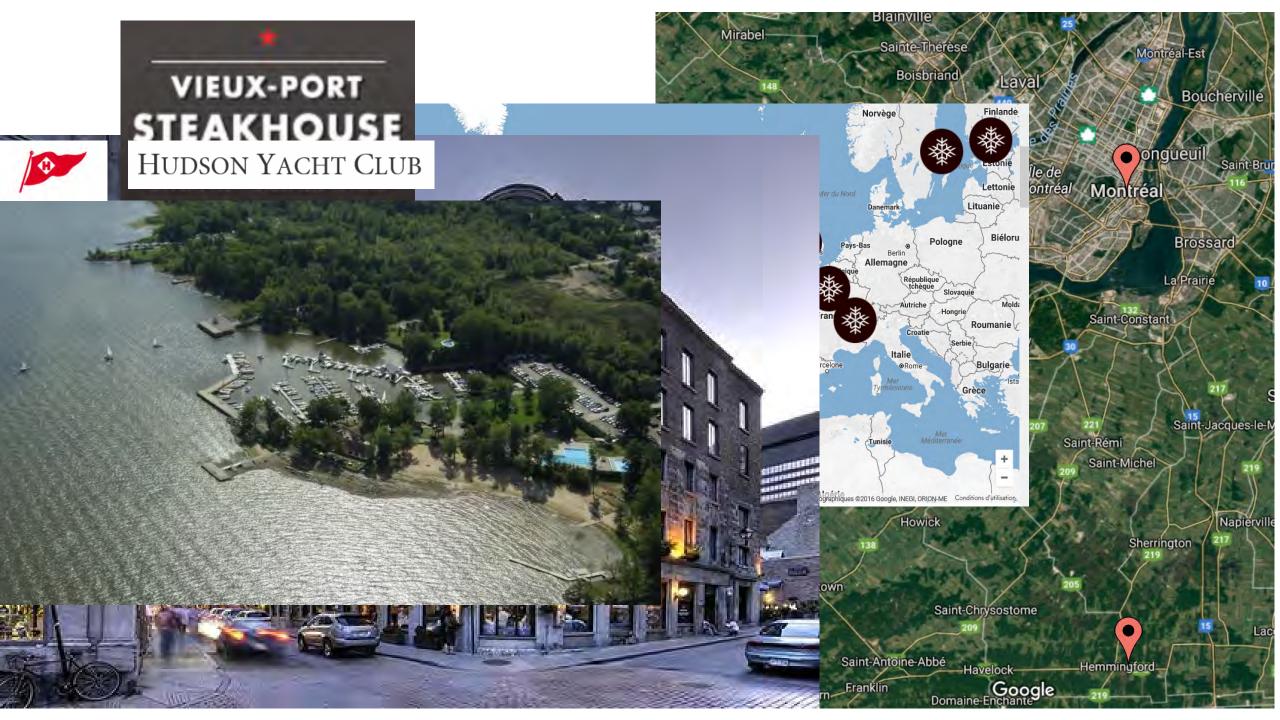
NORTH AMERICAN LAB MANAGERS ASSOCIATION

MONTRÉAL • QUÉBEC • CANADA



Please meet Ponto, Montreal unofficial mascot!



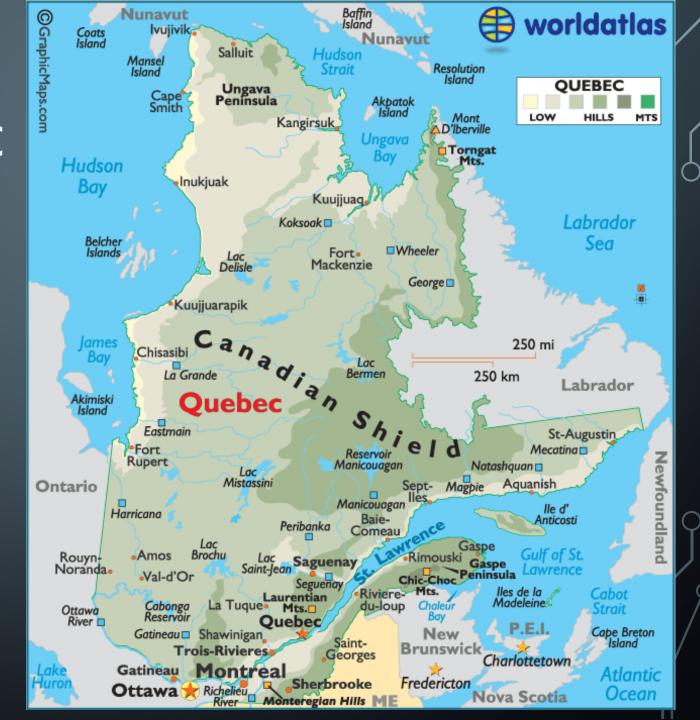






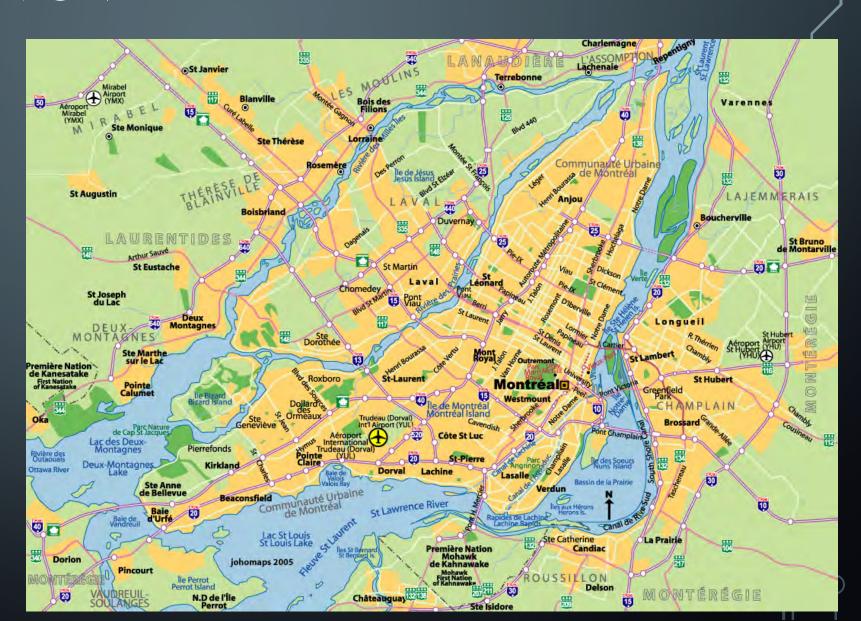
WELCOME TO QUÉBEC

- 8 M people
- 1.5 M km²
 - 2% arable



WELCOME TO MONTRÉAL

- City 1.8 M
- Metro area: 4 M





CANADIAN DAIRY CONTRIBUTES TO THE CANADIAN ECONOMY 🕮





- 12,000 farms w/ \$6B+ in farm sales (82 M hL)
- 444 processing plants w/ \$15B in sales
- 221,000 jobs
- \$19.9B to GDP
- \$3.8B in taxes to government

STATS: CASH RECEIPTS \$6.733 BILLION

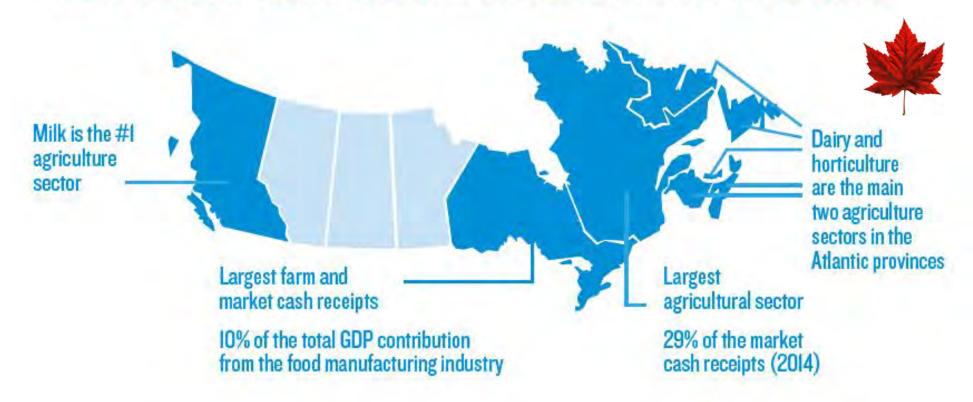


Billion of litres of milk sold: 8

Dairy cattle sales: \$816 Million or 12-15% of total beef in Canada

Genetic exports: \$140 M

DAIRY IS ONE OF THE TOP TWO AGRICULTURE SECTORS IN 7/10 PROVINCES



Source: Canadian Dairy Information Centre / Centre canadien d'information laitière

CANADIAN DAIRY CONTRIBUTES FROM COAST TO COAST



dairy is one of the top two ag sectors in 7/10 provinces



Source: AAFC

DAIRY IN CANADA

Total net farm receipts	\$ 6.02 billion
Dairy manufacturing shipments	\$17.0 billion
Dairy cattle population	1.4 million head
Number of dairy farms	11,450
Milk production	81.8 million hl
Organic milk production	1.033 million hl
Goat milk production	0.547 million hl

DAIRY IN CANADA

Largest pi Number o Milk utilizatio Fluid milk Industrial milk



ıalat

PRODUCTION OF MAIN PRODUCTS

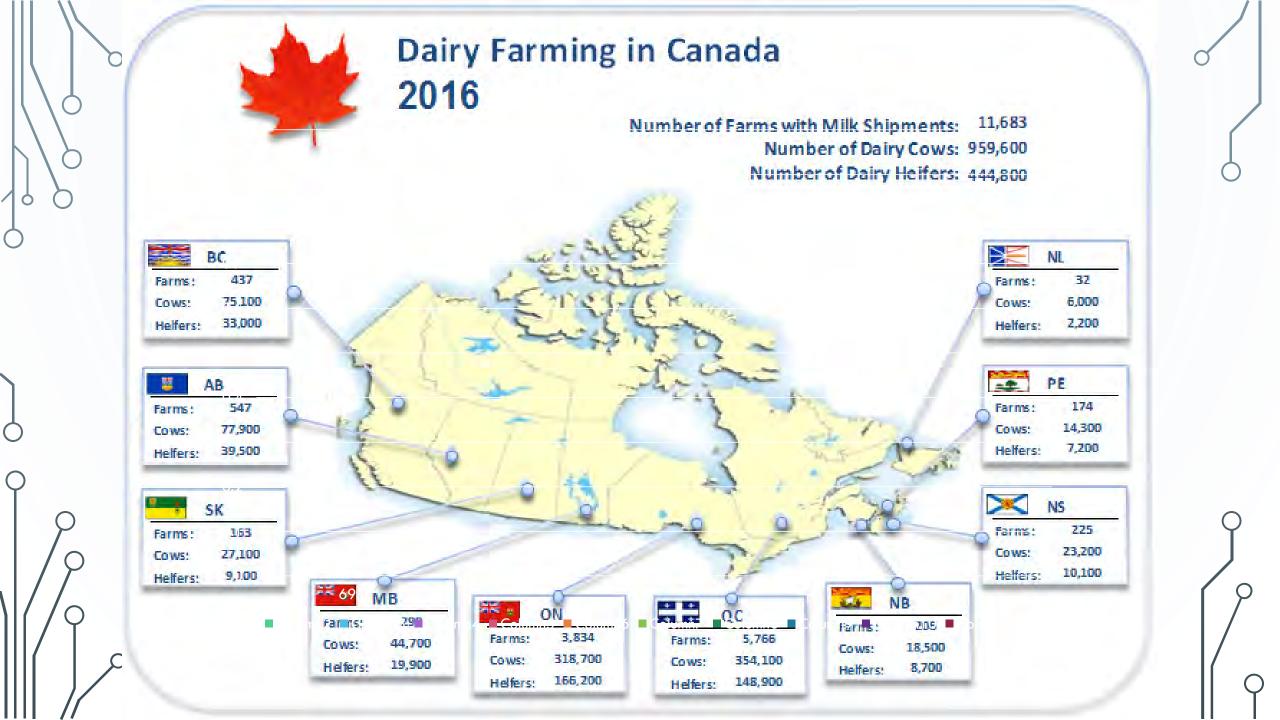


Specialty cheese	143,408 tonnes
Cheddar	146,570 tonnes
Mozzarella	128,587 tonnes
Yogurt	405,704 tonnes
Hard ice cream	148,722 tonnes
Butter	88,334 tonnes
Skim milk powder	97,823 tonnes

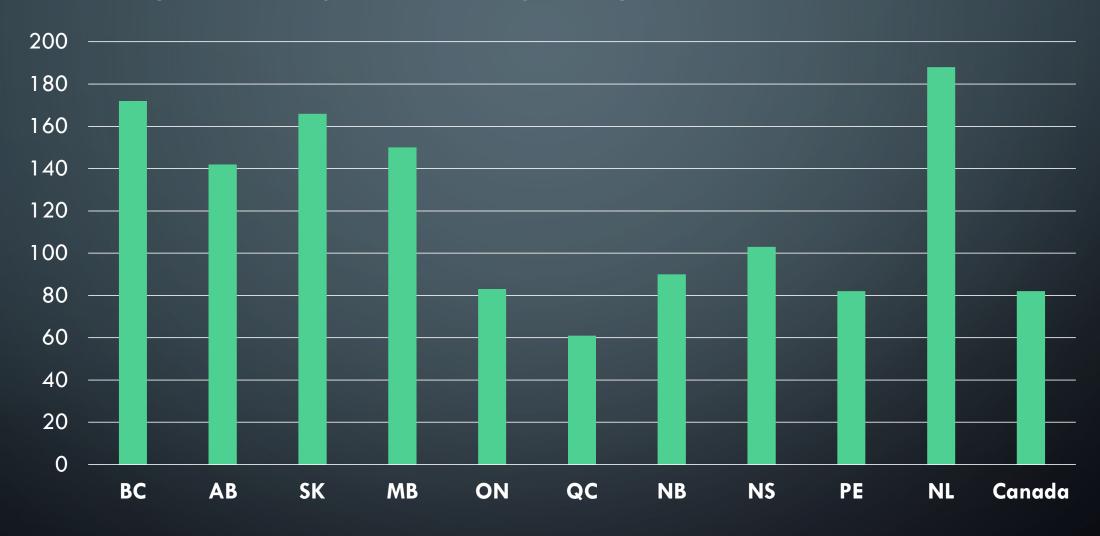
PER CAPITA CONSUMPTION



Fluid milk	71 litres
Cheese	12.5 kg
Cream	10 litres
Yogurt	10.5 litres
Ice cream	5 litres
Butter	2.8 kg

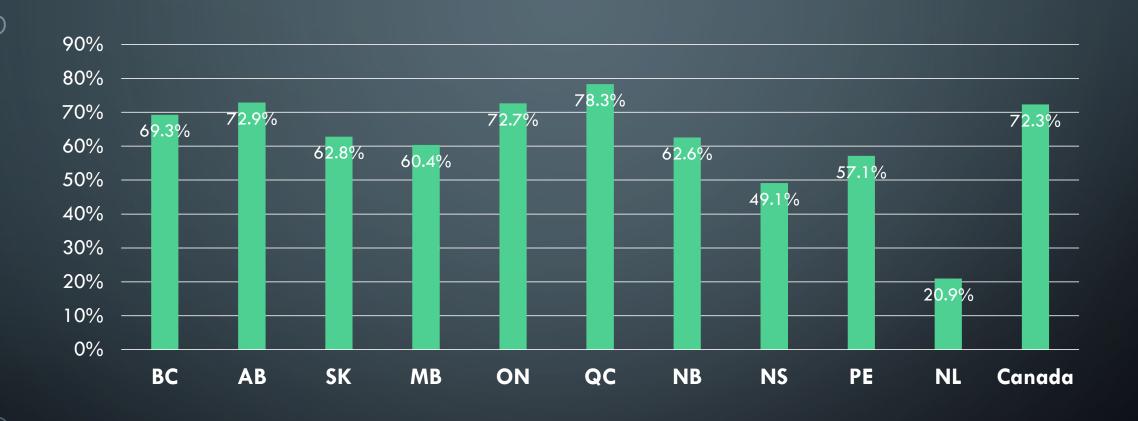


AVERAGE HERD SIZE BY PROVINCE

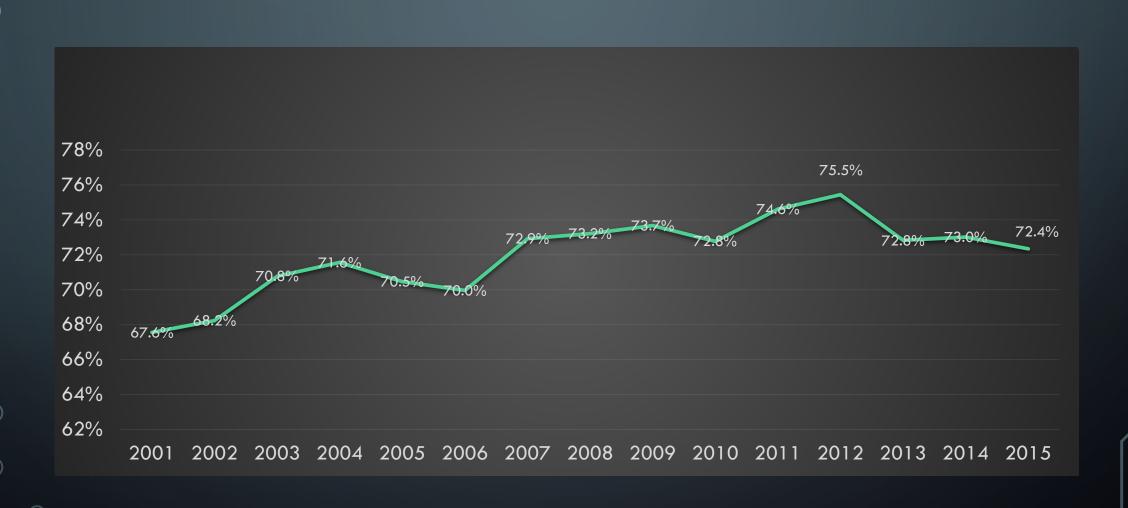


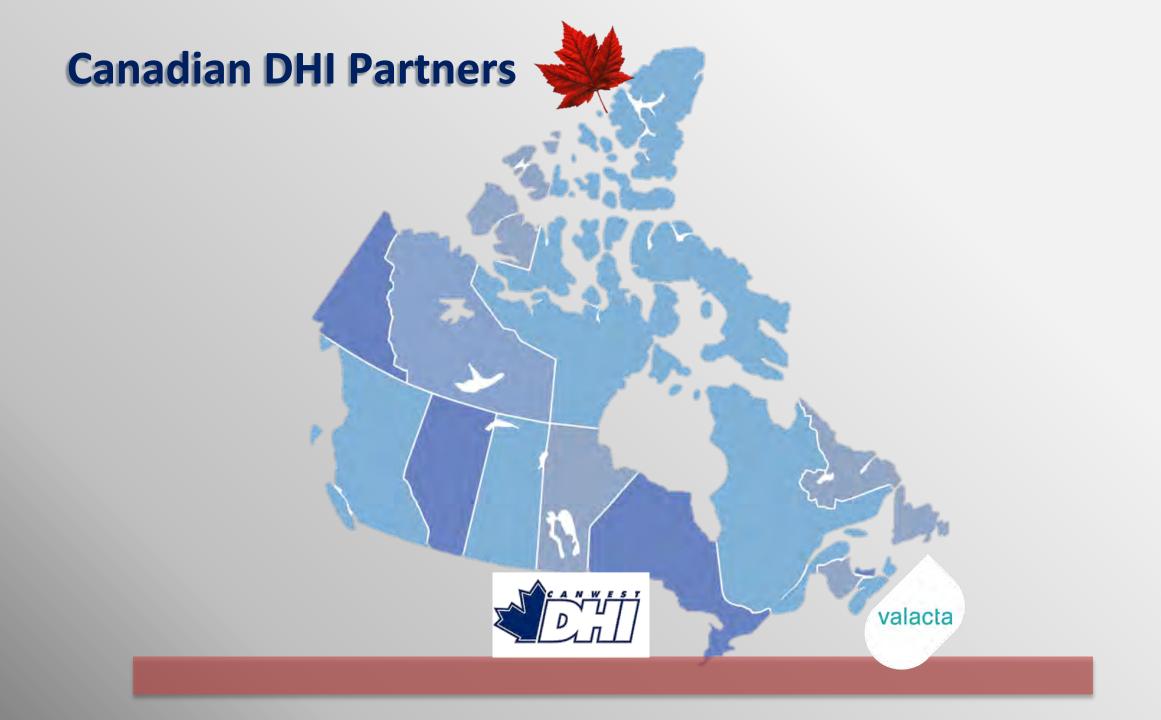
Dairy Barns by Type in Canada Free Stall 1,878 Tie Stall 22.4% 5,937 70.8% Robotic System 574 6.8%

PERCENTAGE OF DAIRY COWS ON MILK RECORDING



PERCENTAGE OF DAIRY COWS ON MILK RECORDING PROGRAMS





PRODUCTION STATISTICS

Production (kg)	9300
Fat %	4.01
Protein%	3.29
SCC (000 c/ml)	223
Calving interval (d)	419
Replacement rate (%)	34

SM

Supply Management



THREE PILLARS

Based on 3 Essential Pillars:

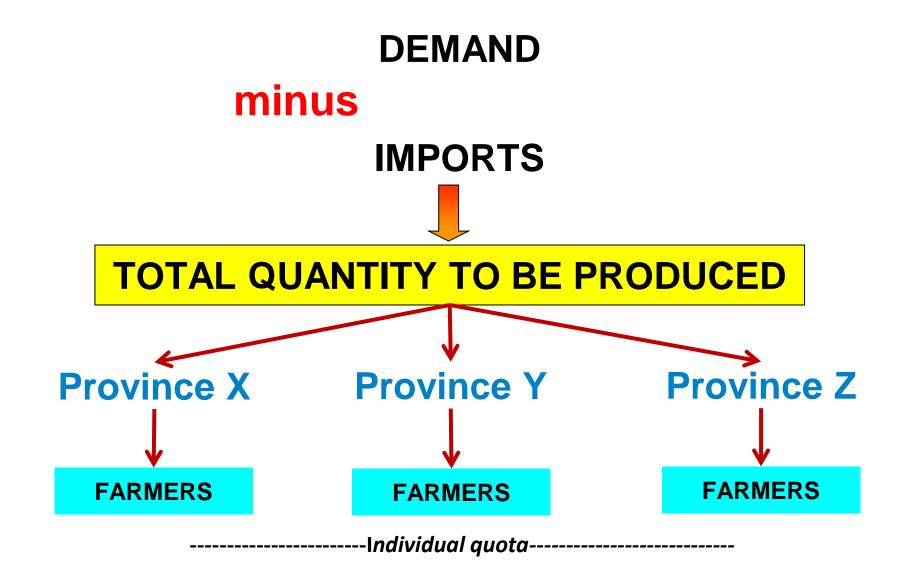
- 1. Production Discipline
- 2. Predictable Import
- 3. Fair Price to Farmers



All equally important



SUPPLY MANAGEMENT



BENEFITS OF SUPPLY MANAGEMENT



- Fair and stable price for producers
 - Fair share of retail price (approx 50%)
 - Takes into account cost of production
- NO government subsidies or support programs
- Optimized processor suply chain and transportation
- Predictable supply for processors
- Garanteed access to high quality products at fair and stable price for consumers

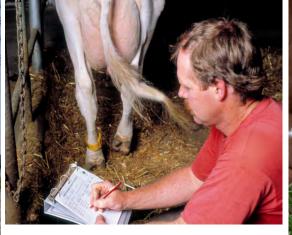


indicators value-chain competitiveness

sustainability
evidence-bas validation social-license social-content professional assurance

Milk Quality Food Safety Traceability















Animal Care Biosecurity Environment







DAIRY PRODUCTION CENTRE OF EXPERTISE







PEI ANALYTICAL LABORATORIES

23 Innovation Way Charlottetown, PE

Presented By: April Driscoll

PEI ANALYTICAL



- Provincial government lab
- Operates in conjunction with Environmental and Agricultural Departments
- Offer testing to serve clients and industry for regulatory, research and management purposes

WHERE IS PEI?



- Located on the east coast of Canada
- Surrounded by waters in the Gulf of Saint Lawrence and the Atlantic Ocean
- Canada's smallest province
- Population of 146,283

HOW BIG/SMALL IS PEI?



- Area of 5660 km²
- 224 km long
- Width ranges from 4 km to 60 km
- Highest elevation is 142 m

SUMMER ON PEI



- Daytime temperatures usually 20 C (68F), can reach highs of 34 C (93.2F)
- Average rainfall amounts are 3-4 inches a month from May to November



- Average temperature is -3C (26.6F), can reach lows of -25C (-13F) with wind chills
- Average snowfall amount 290cm (114 inches)
- Winter of 2014/15 had 551cm (216 inches)





INDUSTRIES

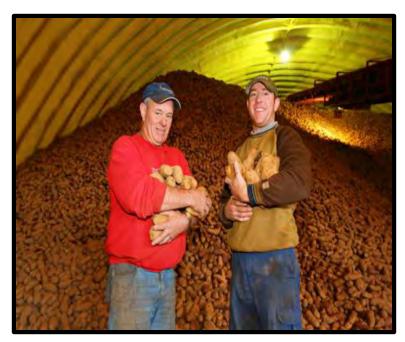
- Agriculture
- Fisheries
- Tourism
- Aerospace
- Bioscience
- Information Technology
- Renewable Energy

FARMING ON PEI



- Total land area of 1.4 million acres
- 594,000 acres cleared for agricultural use
- 1,500 farms growing crops or raising livestock





- Potatoes are PEI's largest commodity
- 2014 26 million hundred weight (cwt)
- Cash receipts vary ranging from 203 to 257 million
- 89,500 acres planted in 2015

DAIRY INDUSTRY





- 169 Dairy Producers
- Herds range from 15 to 350 cows
- Annual milk production exceeds 100 million liters
- 15% fresh market
- Remainder for production of butter, cheese, ice cream, and other dairy products
- Breeding stock sold in Canada and internationally

- Supply management system
- Quota sells for \$24,000/kg
- Dairy Farmers of PEI (DFPEI) regulate and administer board orders
- Two dairy processing companies producing variety of dairy products





PEIAL



- Building opened in June 2012
- 15 staff positions, 9 support /management,
 6 seasonal
- Dedicated Quality Assurance Officer and IT Officer

SAMPLE RECEPTION



Key to every successful business

PEIAL LAB SERVICES

- Chemistry and Microbiology divisions
- Compost, manure, plant tissue, soil, seed germination, diary composition, dairy micro, water micro, plant diagnostics, Aphid Alert





- Accredited by Standards Council of Canada in compliance with ISO/IEC 17025:2005 standard
- Accreditation reconfirmed in 2016

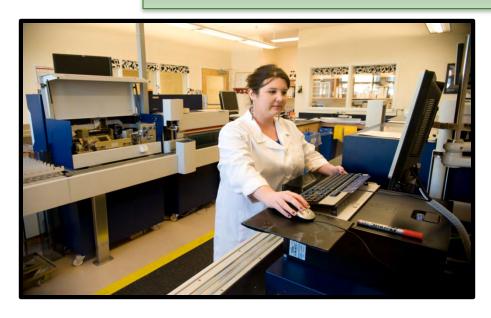
CHEMISTRY STATISTICS

	2014	2015
SOIL	10,278	9,906
FEED	2,557	3,098
PLANT TISSUE	2,534	1,379
GREENHOUSE	207	172
SEED GERMINATION	432	453
SPECIAL PRODUCTS	(COMPOST	. MANURE. ETC.)
		· MANIACINE, EIC.
PECIAL PRUPUCTO	914	1,133
GROUND WATER	II I I I I I I I I I I I I I I I I I I	WWWINKE FILL
DELLIAI ERUMULIO	914	1,133
GROUND WATER	914 1,925	1,133 2,353

MICRO/DAIRY/PLANT STATISTICS

	2014	2015		
GROUND WATER	13,219	<u>1</u> 3,539		
SURFACE WATER	526	642		
WASTE WATER	1,224	1,479		
CANADIAN SANITARY SHELLFISH PROGRAM				
	3,656	3,623		
DAIRY MICRO-RAW	8,592	8,329		
DAIRY MICRO-PROCESSED	499	369		
DAIRY COMP-VALACTA	278,447	275,032		
DAIRY COMP-BULK TANK	8,589	8,326		
PLANT DIAGNOSTICS	291	131		
APHID ALERT	575	560		

DAIRY COMPOSITION LAB

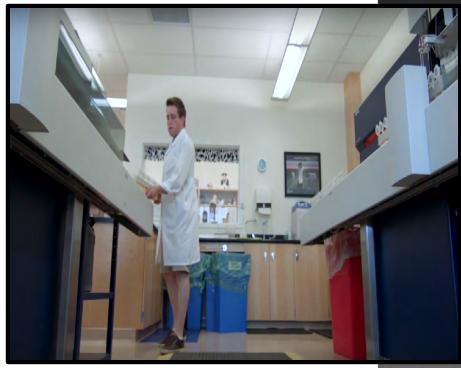




- Two FOSS Combi-lines
- Two FOSS Fossomatic FC's
- One FOSS MilkoscanFT and one FT +
- Two Advanced Instruments Cryoscopes

2015 SAMPLE NUMBERS





- Valacta 275,000
- Regulatory 8,326
- Voluntary 7825

PARAMETERS TESTED

- Fat, protein, lactose, milk urea nitrogen, BHB
- Somatic cell
- Added water



DAIRY MICROBIOLOGY LAB



- Two FOSS Bactoscan lines
- Charm Rosa readers and incubators
- 3M Petrifilm reader





2015 SAMPLE NUMBERS





- Processed 369
- Voluntary 132

PARAMETERS TESTED



- IBC
- Antibiotics Beta Lactams, Sulfa and Tetra
- Total Coliform/E. coli
- Aerobic Plate Count
- Staph aureus
- Lab Pasteurization Count
- Preliminary Incubation Count

WATER MICROBIOLOGY



- Total Coliform/E. coli
- Heterotrophic Plate Count
- TSS
- CBOD/BOD
- COD
- Faecal
- Chlorophyll a
- Ps. aeruginosa

WATER CHEMISTRY



FRAGILE

- Alkalinity/Chlorides /Nitrates
- Low Level Nitrates
- Ammonia
- pH
- Total Nitrogen
- Metals and Trace Elements

SOIL/FEED LABS





- Crude Protein
- Minerals
- Total Ash
- Total Moisture
- Soil pH
- Organic Matter
- Soil Nutrients
- Seed Germination

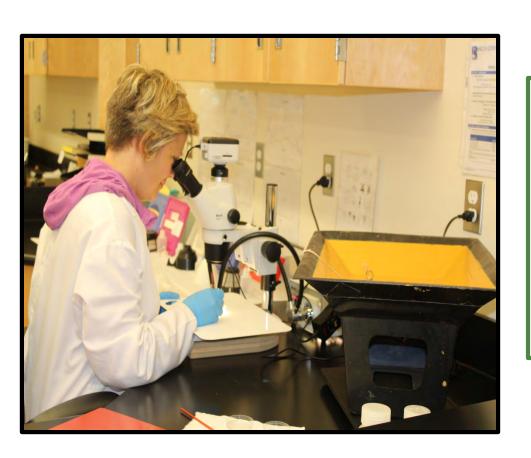
PLANT DIAGNOSTICS





- Assess disease and pest issues
- Commercial crops and home gardeners
- Issue pest and disease updates

APHID ALERT PROGRAM

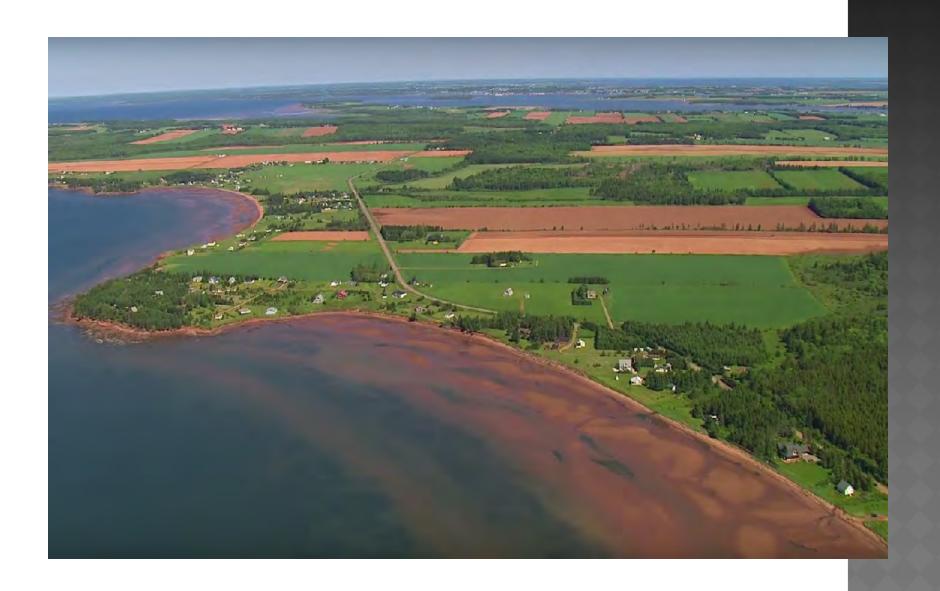


- Monitoring program for Green Peach and other aphid populations
- May to October
- 552 Samples received in 2016

PHOTO CREDITS

- www.princeedwardisland.com
- www.dfpei.pe.ca
- www.graphicmaps.com

THANK YOU











Ottawa, Canada's Capital





Home of this guy





Toronto, Ontario's Capital





Home of these guys







Algonquin Provincial Park





Niagara Falls





Ontario Veterinary College University of Guelph





Guelph Lab building





Guelph Lab Stats

~1.8 million component tests/year (~150,000 per month)

25% MUN; 35% BHB

25,000+ mastitis tests/year

43,000+ preg tests/year

~11,000 Johnes tests/year

~9,000 Leukosis tests/year

9 full time staff; 2 part-time staff





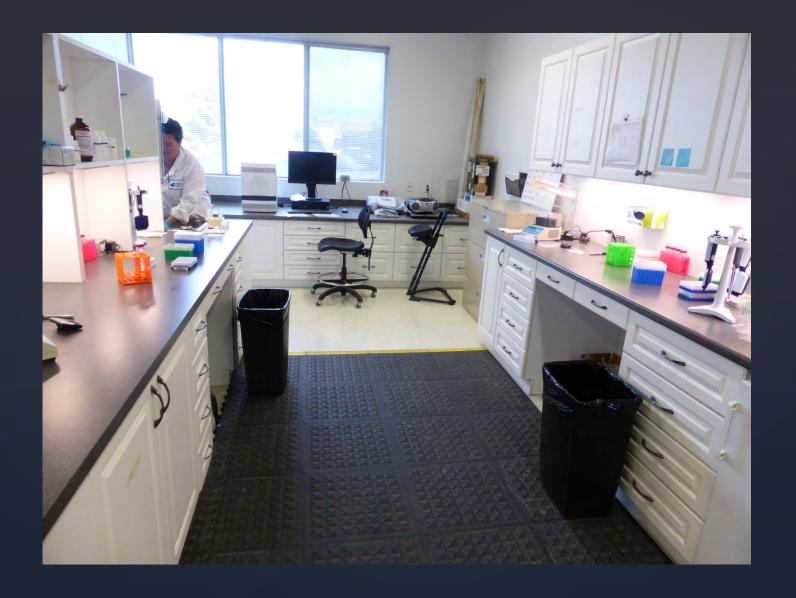




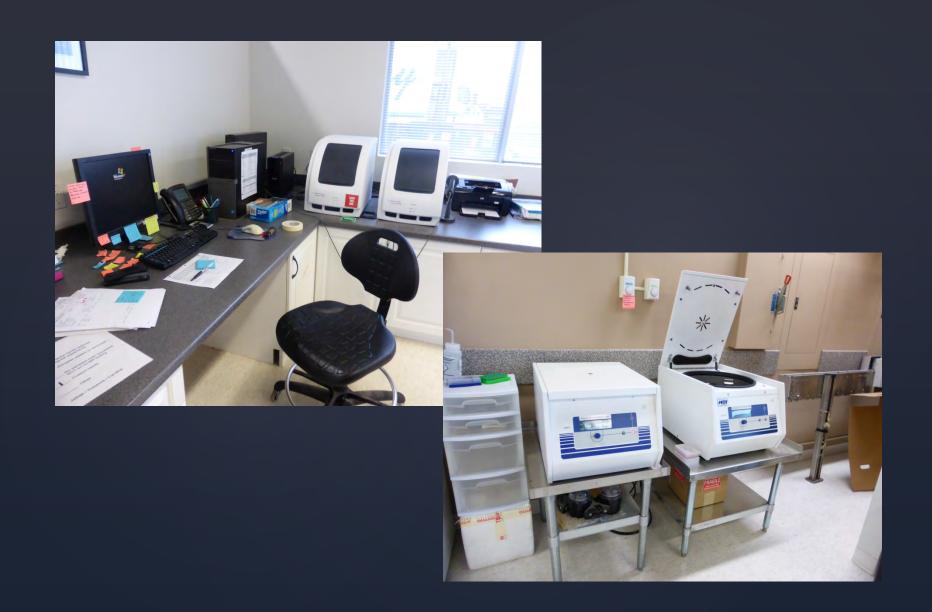














Unique Challenges Opportunities

Total reliance on courier

Waste disposal (milk)

Barcoding of vials

Recycling of vials

Onsite vial storage



Vials – single-use, pre-pilled (Bronopol + Y/M inhibitor) and barcoded

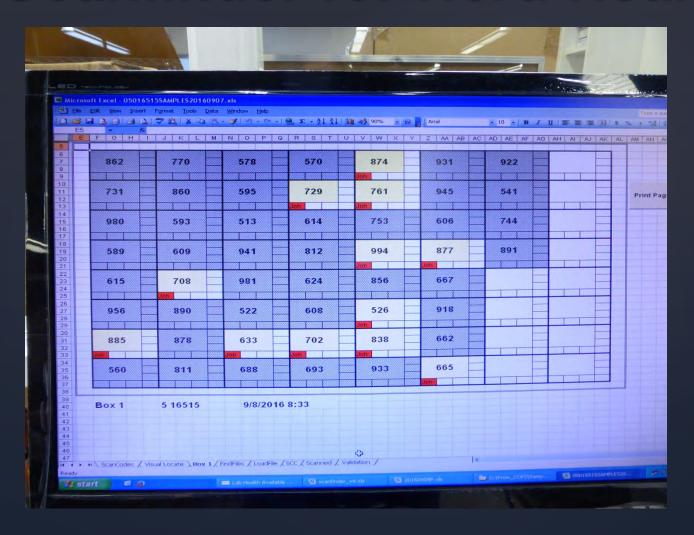








Scanfinder for Herd Health





Vial Recycling





Vial Storage





Questions?





Central Milk Testing Lab Edmonton, Alberta, Canada

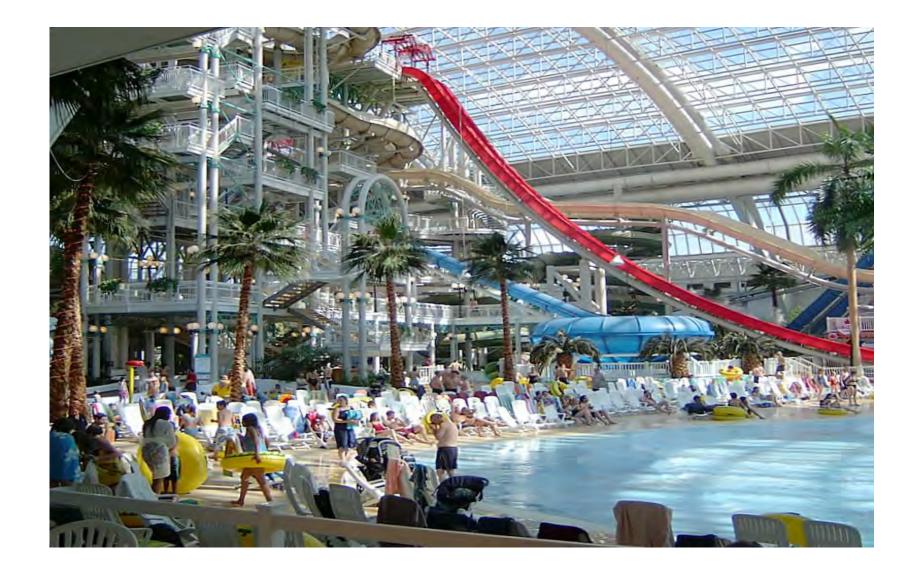




Edmonton- Alberta- Canada



Edmonton Skyline



West Edmonton Mall



West Edmonton Mall



West Edmonton Mall



A typical winter day in Edmonton



"Just another 5 more months of this stuff and I'll be back out on the golf course!"



Wayne Gretzky – Edmonton Oilers



Five Stanley Cups in a span of 7 years

CanWest DHI Central Milk Testing Lab

Edmonton, Alberta, Canada





DHI SAMPLE TESTING

- ☐ Approximately 50,000 samples tested monthly
- ☐ Test for FAT, PROTEIN, LACTOSE, MUN, BHB, SCC
- ☐ Test DHI samples from Alberta and Saskatchewan
- ☐ Samples requiring Johnes, Leukosis, Mastitis PCR, and Pregnancy check testing are sent to the Guelph DHI Lab for testing



CombiFoss FT6000

COMPONENT TESTING FOR PAYMENT PURPOSES

- ☐ Test samples taken from every farm's bulk tank pick up
- ☐ Approximately 13,000 samples tested monthly for payment purposes
- ☐ Test for FAT, PROTEIN, LACTOSE, MUN, FPD, SCC
- ☐ Test samples for Alberta and Saskatchewan





Bactoscan FC150

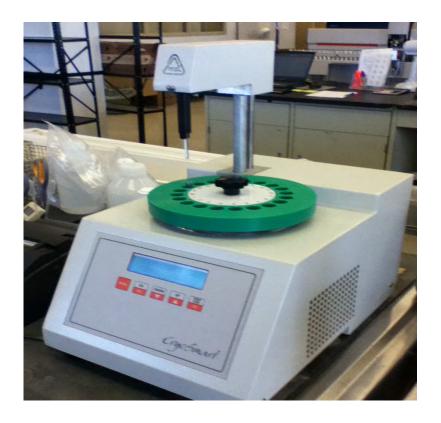
Raw Milk Quality Testing

- Every milk producer is tested twice a week for IBC total bacteria count
- ☐ Approximately 7,000 samples tested monthly



Inhibitor Testing

- ☐ Every dairy producer is tested once a month for the presence of beta lactam drug residues and once every three months for sulfa and tetracycline drug residues.
- ☐ Also do drug testing for confirmation purposes on positive truck loads.



Testing for added water in milk

- ☐ Test every payment bulk tank sample for presence of added water.
- Testing done by Infrared analysis using the Milkoscan FT6000
- ☐ Cryoscope instrument used for calibration of the Milkoscan FT6000



Dairy Chemistry Testing

- ☐ Produce calibration milk and cream standards for sale to dairy processors
- ☐ Chemical analysis on raw milk and finished dairy products
 - **☐** Mojonnier method for butterfat determination
 - ☐ Kjeldahl method for protein determination
 - ☐ Total solids determination
 - □ Ash determination



Crude Protein Determination by Kjeldahl Method

 Crude protein analysis on raw milk and finished dairy products such as cheese, yogurt, and sour cream.



North America Lab Managers Association

September 12th and 13th, 2016 Montreal, Quebec

Ken Kwiatkowski Lab Director, Horizon Lab Ltd.





A little bit about "where" and "who" we are...







We primarily serve and support the province of Manitoba.



What do Manitobans enjoy doing?

Hunting Fishing

Camping

Sports

....and many other activities...







Manitoba and Agricultural

 Many growing industries, but "Ag" is still "King".

> Animal agriculture including (beef, pork, poultry and....of course....dairy)

- Grains
- Oil Seeds
- Pulse Crops





Our Mission:

To provide high quality testing services and exceptional value to our dairy, environmental and other industry customers.

Our Values:

Respect and integrity for all of our stakeholders.

Quality products and services.

Being dynamic and innovative.

Accuracy, Promptness and Reliability.

Excellence in everything we do.



Horizon Lab Ltd. (formerly MFC Testing and Research Inc.) is a wholly owned subsidiary of Dairy Farmers of Manitoba and has over 20 years of experience.

Accredited under the Standards Council of Canada to current ISO/IEC 17025 Standards

Participate in proficiency and inter-laboratory test programs with the Canadian Laboratory Accreditation Program (LAP), the Canadian Association for Laboratory Accreditation (CALA).



An Overview of Our Current Services

Dairy

- Individual Bacteria Counts (IBC)
- Somatic Cell Counts (SCC)
- Components (Protein, Fat, Lactose, Milk Urea Nitrogen, BHB, Other Solids and Freezing Point)
- Bacteria analysis
- Inhibitor or Antibiotic Testing
- Broad Drug Residue Screening
- Trace Iodine Analysis

Drinking Water/Water

- *E.coli,* Total Coliforms and Heterotrophic Plate Count
- Trace Elements (>28 elements)
- Nitrates/Nitrites
- Several other test parameters



Key Clients

- Dairy Farmers of Manitoba
- Processors
- DHI
- Manitoba Office of Drinking Water and other Government Offices
- Walk-up Customers

• Horizon Lab is analyzing ~200,000 samples/ year for DHI; testing consists of: protein, fat, lactose, MUN, BHB and freezing point.



Foss - BactoScan





Foss - CombiFoss





Charm Trio – EZ Reader





uHPLC-TOF/MS





ICP/MS





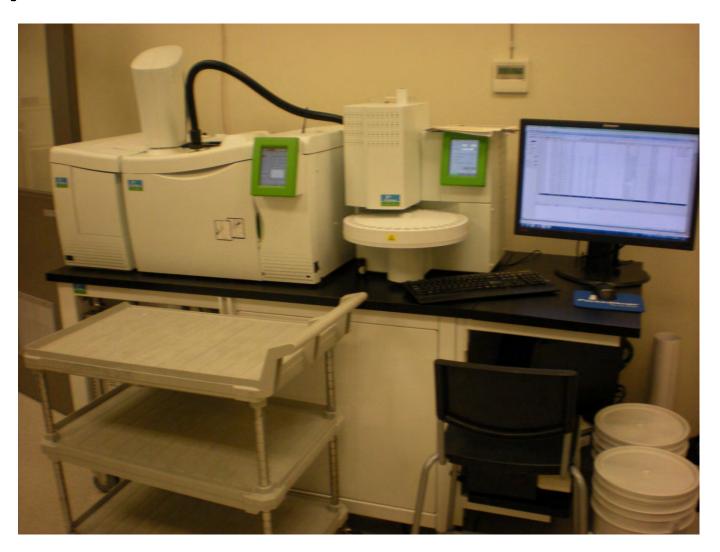
In-Progress and Future Considerations

- PCR Technology
 - Pathogen testing for feed, food and dairy
 - Genetic trait testing in feed and food
- Expand GC/MS
 - Drinking Water and Water
 - Volatile Organic Compounds (VOCs)
 - Trihalomethanes (THMs)
 - Haloacetic Acids (HAAs)
 - Pesticides

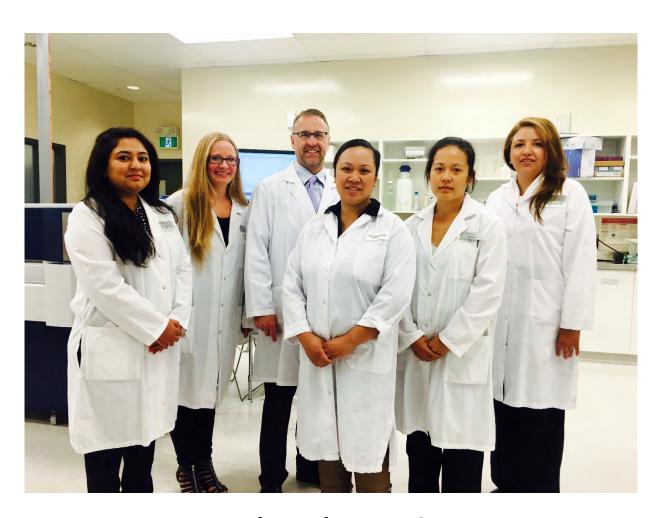
- Expand ICP/MS
 - Trace elements in feed, food, soil
- Expand uHPLC-TOF MS
 - Pesticides
 - Drugs



GC/MS







Thank you!

Pacific Milk Analysis Lab Chilliwack, British Columbia



Chilliwack, British Columbia



Dairy Farm – Chilliwack, B.C



Vancouver, British Columbia



Grouse Mountain Gondola



Grouse Mountain – Vancouver B.C.

CanWest DHI Pacific Milk Analysis Lab

Chilliwack, British Columbia, Canada







DHI Sample Testing

- ☐ Approximately 30,000 samples tested monthly
- ☐ Fat / Protein / Lactose / MUN / BHB / SCC
- ☐ Samples requiring Johnes, Leukosis, Mastitis PCR, and pregnancy check testing are sent to the Guelph DHI Lab for testing



CombiFoss FT6000

COMPONENT TESTING FOR PAYMENT PURPOSES

- Test samples taken from every farm bulk tank pick up
- Approximately 13,000 samples tested monthly
- Test for FAT, PROTEIN, LACTOSE, MUN, SCC, and Freezing Point



Bactoscan FC100

- ☐ Every dairy farm receives two tests per week for IBC
- ☐ Test approximately 7,000 samples per month

Inhibitor Testing

☐ Every dairy producer is tested once a month for the presence of beta lactam drug residues.

Added Water in Milk

☐ Every sample tested for payment purposes is tested for freezing point depression using the Milkoscan FT 6000 and the cryoscope method.

Human Resources at Valacta

NALMA September 12, 2016



When it comes to managing employees, what keeps us up at night?





Consequences

- Loss of knowledge
- Time to find and train a replacement
- Overload on coworkers
- Impact on worker morale
- Quality problems



Solution 1 - Investing in employee motivation

- Bi-annual meetings
- Staff workshops 'World Café'
- Reward programs



Solution 2 - Comprehensive staffing program

- In depth interviewing process
- Psychological tests
- Opinion of the floor supervisor



Solution 3 - Strong company culture

- Company values, gatherings, BBQs, working conditions, etc.
- Employer Brand :





4 commitments:

- 1. Development
- Synergy
- 3. Recognition
- 4. Health

#2 – Dealing with a problem employee

Problem ...



#2 – Dealing with a problem employee



Solution

- Clear definition of problem employee (performance, behavior, attitude)
- Guideline Low Employee Performance: When and How to Intervene

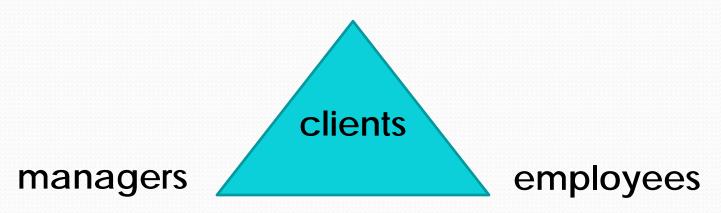
#2 - Dealing with a problem employee - other considerations

- Cause of the problem: Is the problem temporary or permanent? What is the source of the problem?
- Consequences: What are the consequences of the problem for me, the team and Valacta?
- Actual versus acceptable level: Is the employee capable of modifying his behavior, attitude or performance to the expected level? If not, is the employee's feasible level acceptable for us?
- Company practices: What are the typical management practices in these situations?

#2 – Dealing with a problem employee

Solution

- Manager training programs
- Criteria for decision making : triangle balance shareholders



#3 - Dealing with a work accident

Consequences

- Lower productivity
- Production stoppage
- Employee morale
- Costs \$\$\$



#3 - Dealing with a work accident

Solution

- Wellbeing, health and safety
- Balancing personal and professional life (new reality)



Health Vision

Our employees are in good physical and mental health.

They have **energy** for their professional and personal lives.



Valacta Health Program



1) **Physical and social activities** for a healthier lifestyle



2) Work-personal life balance program



3) Accident prevention with bi-yearly inspection and risk analysis



4) Program to help maintain employees at work and to smoothen **return to work**

Stay Healthy. Why?

Personal Life



Professional Life



Retirement



#3 - Dealing with a work accident

Results

- Health related costs decreased by 24,7% in 2 years
- Certification and award





#4 - Baby boomers retiring

Problem

• 23% of our employees are 55 years old or more



#4 - Baby boomers retiring

Solution

- Performance-Potential Matrix
- Career program promoted to our staff
- Benefits for those joining the program



Conclusion









Bruker Optics Vendor Update

Dr. Robert Cocciardi NALMA September 2016

Bruker Corporation



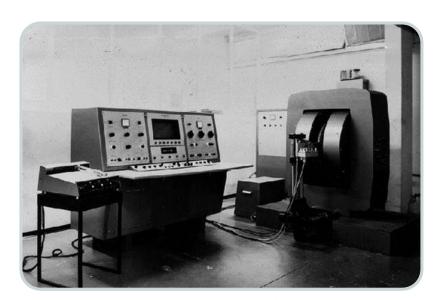
Bruker Scientific Instruments

- Bruker BioSpin Magnetic resonance spectroscopy and imaging (NMR, MRI, EPR)
- Bruker Materials –X-ray, optical emission spectroscopy, atomic force microscopy and stylus and optical metrology instrumentation
- Bruker Daltonics Mass spectrometry, gas chromatography and CBRN detection
- Bruker Optics Optical Vibrational Spectroscopy (FT-IR, NIR & Raman)

History



 1960 - BRUKER Physik AG was founded in Karlsruhe (Germany) by Prof. Günther Laukien with Nuclear Magnetic Resonance products



1967- HFX-90 spectrometer with a 90 MHz iron magnet (the world's first fully transistorized NMR-spectrometer)



Bruker Optics



Over 40 years in FT-IR Spectroscopy!



- Entered the molecular spectroscopy market in 1974.
- Molecular spectroscopy core products based on FT-IR, FT-NIR, Raman techniques.
- Worldwide offices and representatives.
- Recognized for innovative high quality products and high customer support

Bruker TodayGlobal Corporation with Diversified Markets

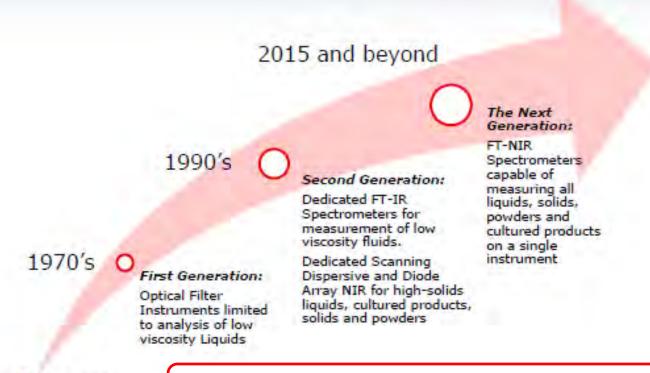


- Global market leadership in many segments
- Worldwide sales and service network with over 6000 employees



Bruker Introduces the Next Generation of Dairy Analysis





Analysis Methods are limited to wet chem methods First Generation FT-IR based instruments perform well. Limitations imposed by the sample handling system limit the technology to a small cross section of products in most dairy processing facilities.

FT-NIR is the Next Generation in Dairy Analysis



Measure Liquids:

Milk, Condensed, UF, Cream and Whey (and more...) without sample preparation

Measure Cultured and thickened products:

Yogurt, Kefir, Puddings, Sour Cream, Cream Cheese

Measure Solid Samples: Cheese, Milk and Whey Powders, Lactose Introducing Simply ONEtm FT-NIR for Dairy



Simply ONE FT-NIR: Faster Return on Investment



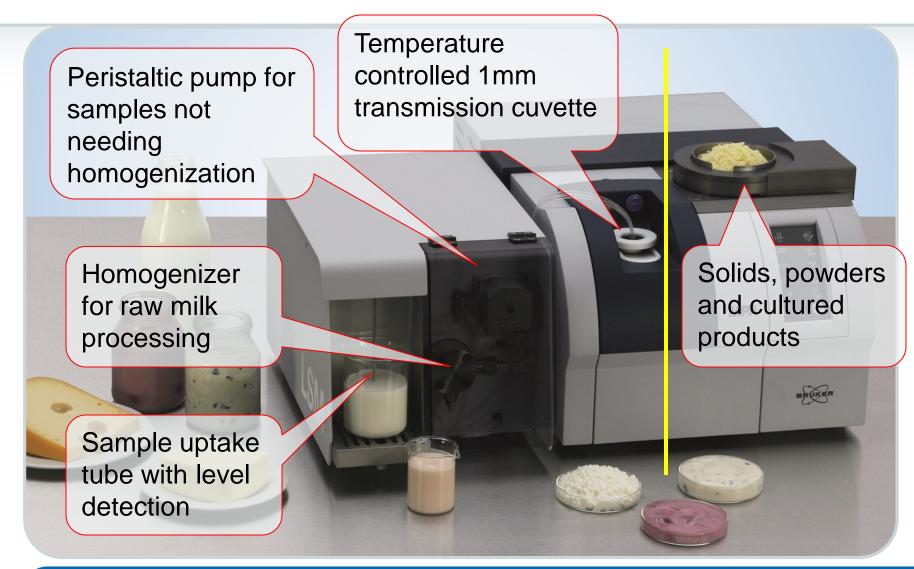


Realizing an
Acceptable ROI for
large scale
processors is
relatively easy.
Small to Mid- size
processors have
more difficulty
unless the
instrument can do
more than just
liquids or just
solids.

- Solids, cultured products and liquids can be analyzed on a single system with no sample preparation
- Results obtained in less than a minute for multiple components
- Features automatic cleaning cycles for liquids and disposable petri dishes for cultured products and solids

Simply ONEtm FT-NIR





Comparing FT-IR and FT-NIR



Transmission Cells

FT-IR: 50 μ CaF₂ Transmission cell

FT-NIR: 1mm quartz transmission cell

Spectra

FT-IR: Measures Fundamental IR

absorbance maxima

FT-NIR: Measures Overtones and Combinations of IR absorbance

maxima

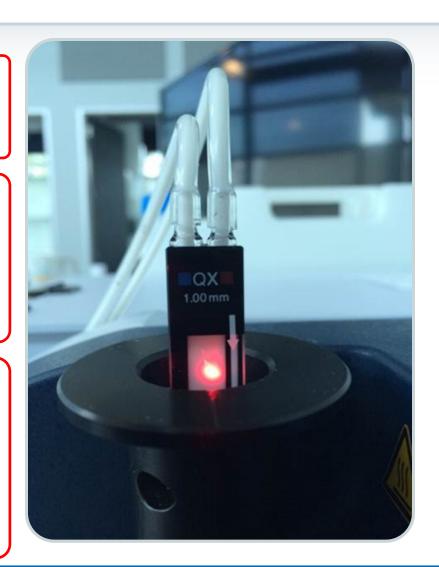
Sample Types

FT-IR: Low viscosity liquids only, no solids without extensive sample

preparation

FT-NIR: Liquids up to 50% solids.

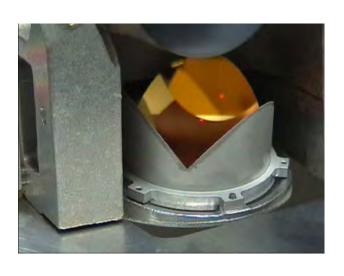
Powders, cultured products and liquids above 50% solids without preparation



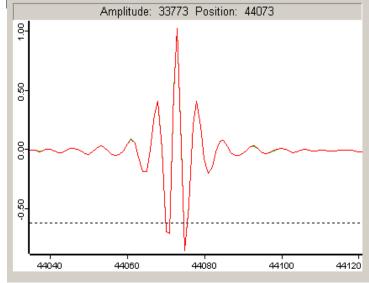
Bruker Corner Cube Mirror Advantage



- Vibration Insensitive
- Temperature Insensitive
- Therefore, model stability for highest accuracy/precision.







Simply ONE FT-NIR Cost of Ownership







The Spectrometer

Part	Frequency		Bruker or Customer
Lamp	12 months	\$367.20	Customer
Laser	36 months	\$1,701	Customer
Desiccant	As required		Customer

The LSM Module

Part	Frequency	Cost	Bruker or Customer
Tube set	36 month*	\$185	Customer
Peristaltic tube	36 month*	\$115	Customer
Homogenizer Valve	36 month*	\$958	Customer
Cell	When broken	\$796	Customer

^{*} Estimated interval based on actual number of samples measured

Summary of Technical Advantages of Using a Bruker FT-NIR



- Zero drift and stable calibrations that only need annual updates
- Fewer consumables and lowest cost of ownership
- Higher signal to noise than classical mid-infrared spectrometers
- User serviceable components thus reducing the need for costly maintenance contracts
- Liquids and solids can be run on the same system
- Can pump significantly higher viscosity samples than any MIR instrument



Tango At-Line Dedicated Analyzers





Compact, single channel FT-NIR

- Intuitive touch panel operation
- Hierarchical organization:
 - Product Groups top level
 - Individual products within Product Groups
- Lowest cost of ownership for any FT instrument
- Direct calibration transfer from MPA



Expanded Product Line to Support Bruker's Integrated Solution for Dairy Processing Plants

In-Line Analysis for Dairy



Six-Channel Multiplexed FT-NIR

- Full spectrum FT analyzer
- Significantly reduced vibration sensitivity
- Calibrations are transferable between analyzers

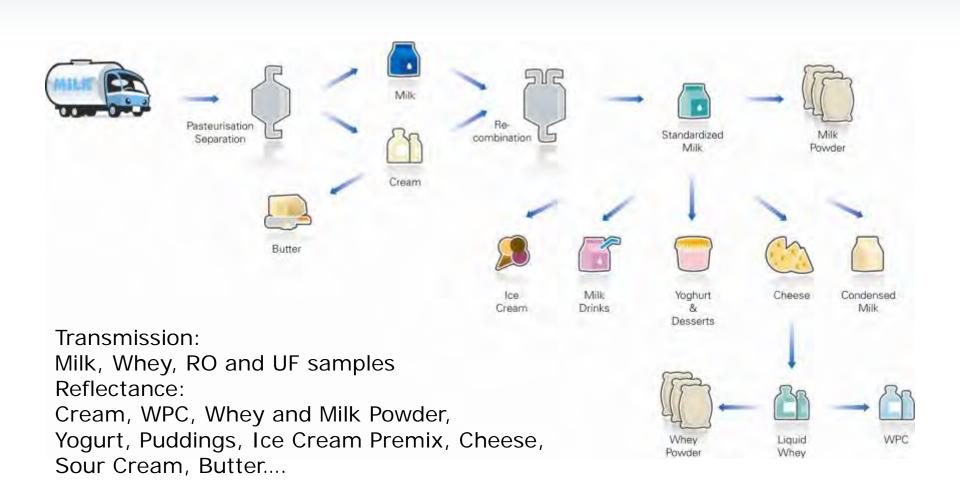
Three models available

- Transmission only
- Reflectance only
- Reflectance and transmission in a single unit



In-Process FT-NIR Applications





Q412/AH 3-A Certified Reflectance Probe

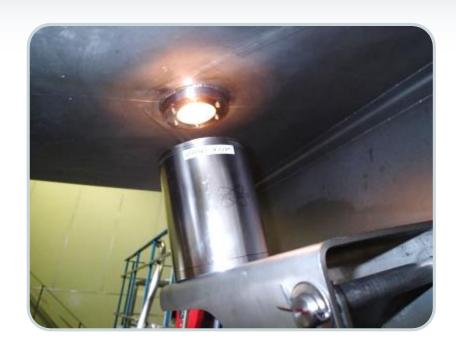




- Large sample illumination area (1 inch)
- Large depth of field (1 inch)
- Internal, on-demand referencing
- Sapphire optics tolerate extreme CIP conditions
- VARINLINE and Weld Flange Adapters
- Single fiber connection to Matrix-F
- Easily removed for servicing without process interruption

Q412 Emission Head for Milk Powder Analysis on a Sifter







Hellma 3-A Certified Transmission Probe



1mm transmission path suitable for milk, whey, RO skim, UF skim, and condensed skim

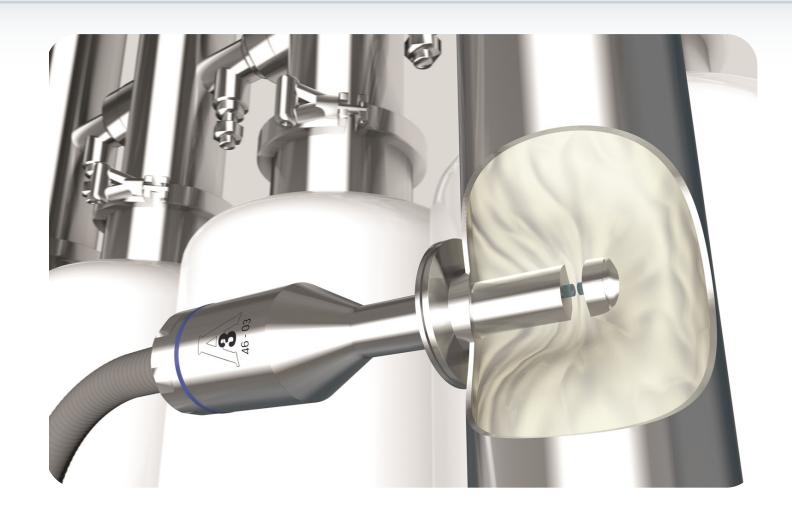
Sapphire Optics are compatible with caustic and acidic CIP processes

2" triclover fitting.
Immersion depth suitable
for installation in 2",
through 8" pipe



Transmission probe installation

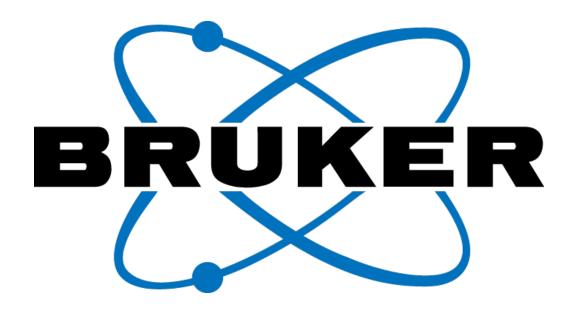




Summary



- Bruker delivers value with a comprehensive product line of next generation dairy analyzers
- We have perhaps the best network of local support resources based out of Bruker's Milton, Ontario office
- Cost of ownership is significantly lower than competing technologies
- Bruker provides world-class training and support
- We have an expanded product line that allows our customers to migrate from the lab to process seamlessly because we use the same technology and have the industry's top calibration transferability



Innovation with Integrity

Thank You for your time and consideration

BENTLEY

INSTRUMENTS

Solutions for the Dairy Industry Henrik Lyder

BENTLEY

INSTRUMENTS

Updates and technologies

- Laboratory automation
- Qualitative data interpretation

Bentley Combi Systems



Combi FTS



DairySpec Combi

Features of Bentley Combi

- Variable speed options 100 600 /hr
- Fully open system (access to all data)
- Critical system functions logged
- Programmable auto-standby / auto-ready
- Internet ready/remote access
- Same software across both platforms
- Customizable data output
- Solid state laser
- Sample and water-bath temp. monitored
- Sealed optical deck reduces desiccant maintenance (annual)



BENTLEY

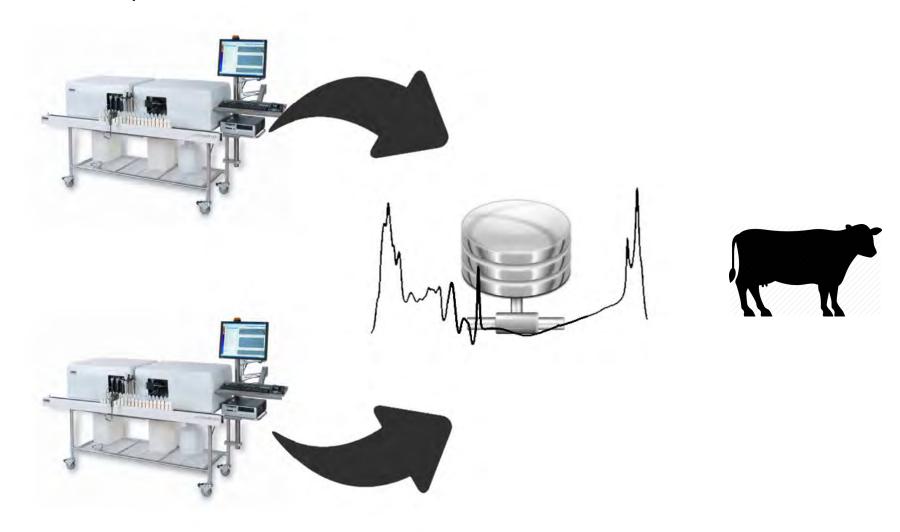
INSTRUMENTS

Lab/LIMS Automation

Bentley CombiFTS 600

Spectral data centrally

• LIMS



Bentley CombiFTS 600

The automation trend

- Consistency in lab operations and sample handling
- Reducing operator stress
- Improve reliability of results by automatic retesting

Semi Automated



The automatic Solution

- Warmed up in a water bath, shaken and identified (RFID, Barcode)
- Uncapping of vials
- Samples are replaced in the tray after analysis.
- Pilot/Control samples automatically inserted in the process
- Samples are automatically retested if error is suspected

Fully Automated



The automatic Solution

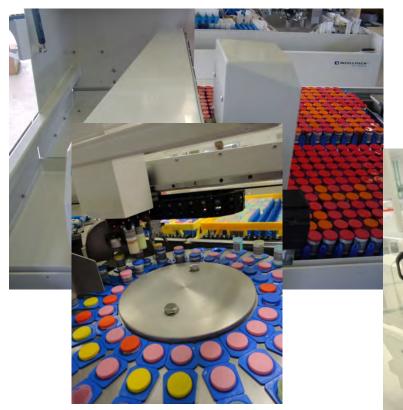
- Warmed up in a water bath, shaken and identified (RFID, Barcode)
- Uncapping of vials
- Samples are replaced in the tray after analysis.
- Pilot/Control samples automatically inserted in the process
- Samples are automatically retested if error are suspected

Fully Automated



The automation Solution





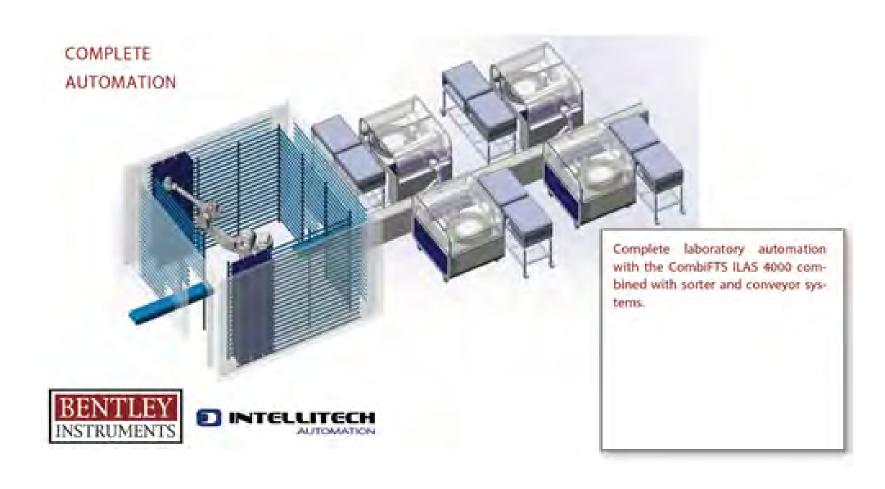


The Automatic Solution



Bentley ILAS 4000, CombiFTS 600

The next project



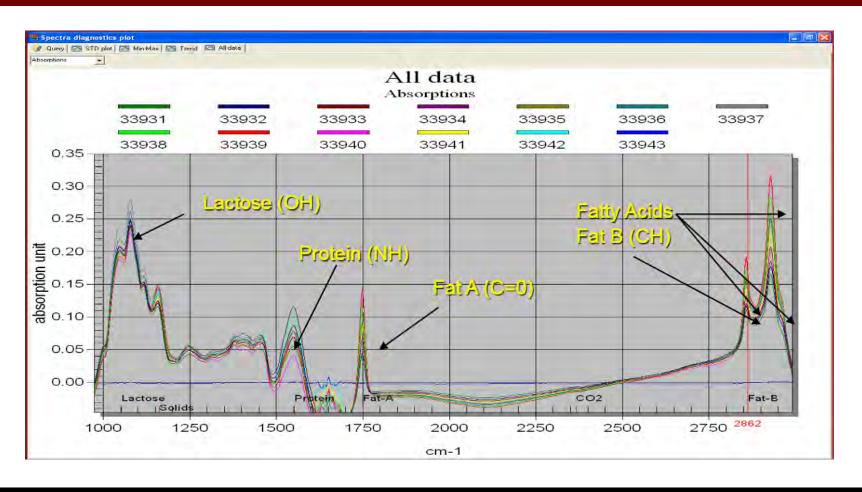
BENTLEY

INSTRUMENTS

Qualitative data

The qualitative approach to quality

Each sample has a unique fingerprint.



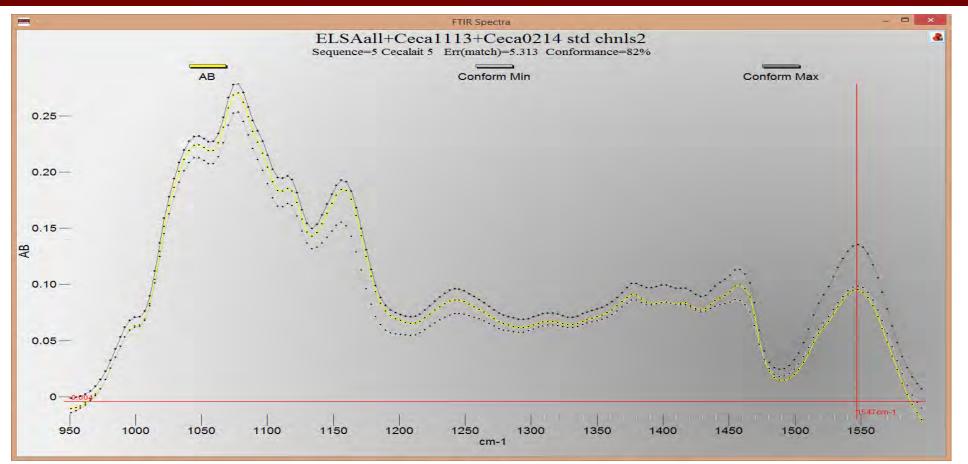
The qualitative approach to quality

Qualitative analysis can be used to:

- Detect abnormal samples
- Detect adulterated samples
- Detect instrument abnormal behavior
- Inconsistent sample handling

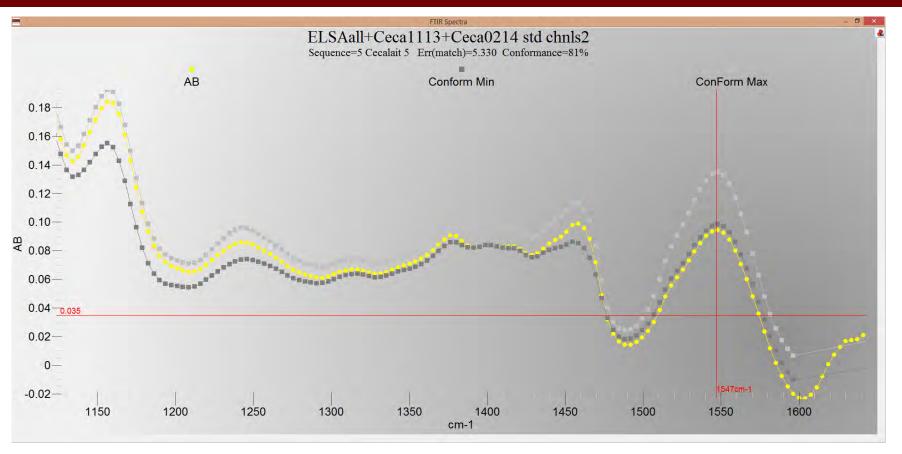
Trust your samples

Comparing to trusted samples:



Trust your samples

Comparing to trusted samples:



BENTLEY

INSTRUMENTS

Thank you

hlyder@Bentleyinstruments.com

Dedicated Analytical Solutions

DHI TESTING IN 2016 AND THE FUTURE

Dr. Daniel Schwarz, Cattle health specialist, FOSS, Denmark

12 September 2016



MASTITIS

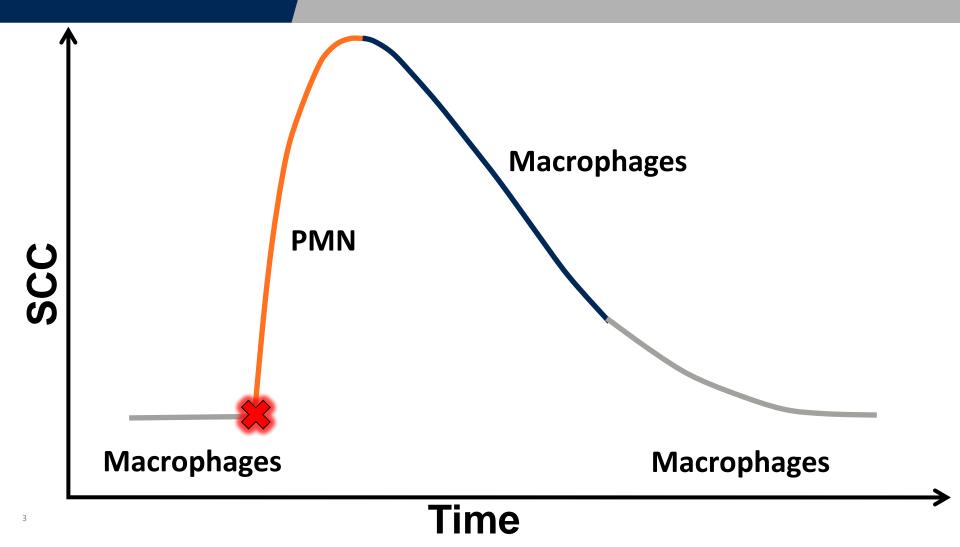
\$2 billion annual losses in US alone

Antibiotics

Sustainability of dairying



MASTITIS CASCADE



DIFFERENTIAL SCC (DSCC)

New business opportunities



IMPROVED BACTERIOLOGICAL EXAMINATION





- Targeted selection
- Better interpretation



USE OF ANTIBIOTICS AT DRY OFF



Improved decision tool



DSCC RESEARCH IN PROGRESS

3-years projects in





Microbiological testing

Guidelines



DIFFERENTIAL SCC – SUMMARY

DSCC to further tackle mastitis

Practical application requires more research

Multi-discipline collaborations – Complexity of the disease



KETOSIS

Negative energy balance

Invisible – subclinical



Testing labour intensive – exception: DHI samples



BHB AND ACETONE IN MILK

Calibration development:

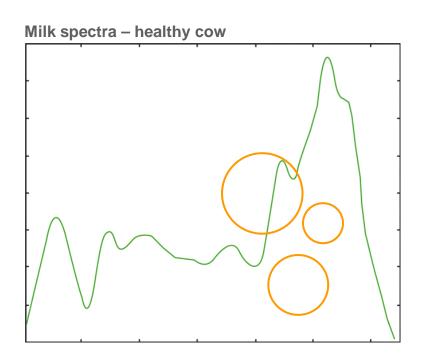
healthy sick

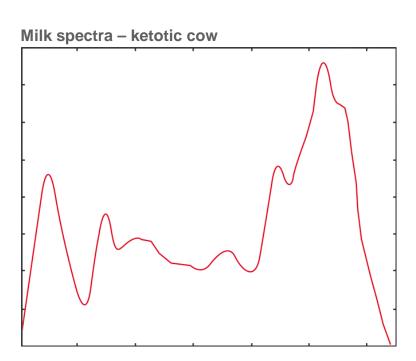
Reference analysis: Milk samples on Skalar instrument



BHB AND ACETONE IN MILK

Low concentrations – indirect calibration:





Regular reference testing – IDF guideline



COMMUNICATION OF KETOSIS SCREENING

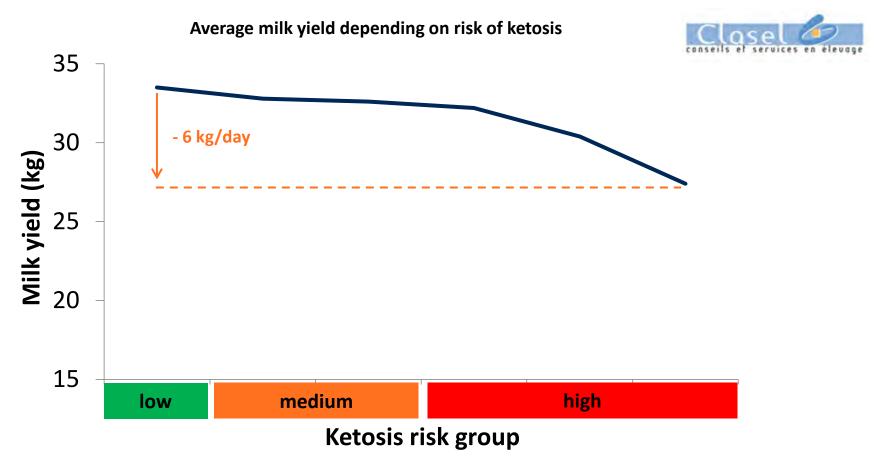
Definition: Ketone bodies elevated in blood

Correlation of blood & milk BHB!?

- Milk synthesis:
 - BHB, fatty acid synthesis
 - Acetoacetate, butyrate (Dodds et al., 1981)

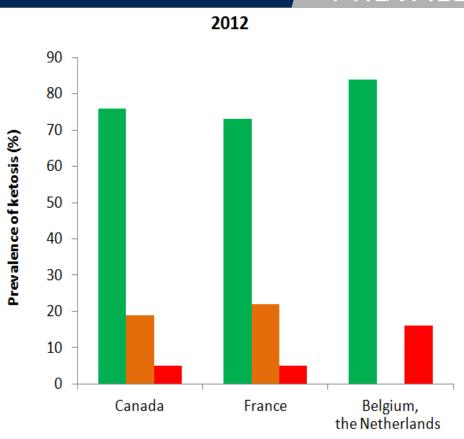


IDENTIFICATION OF PROBLEM COWS





DEVELOPMENT OF KETOSIS PREVALENCE OVER TIME



Risk for ketosis:
low medium high

Prevalence of ketosis (low, medium, high risk)



FROM LAB TO FARM

1. Just BHB results

- 2. BHB & acetone results included in a decision tree:
 - a) Ketosis yes/no
 - b) Ketosis risk group (e.g., 1-5)
 - c) Ketosis index

Herd level screening rather than individual cow diagnostic tool



FROM LAB TO FARM — DENMARK

Danish Cattle Federation, Denmark



Overview 1: Number of freshening cows with elevated BHB values

	Number of freshening cows (5-35 DIM)	Proportion of cows with elevated BHB values (>0.15 mmol/l)	Status
1 st calving	Too few animals**		
2+ calvings	11*	27%	

Threshold for alert: 15%

Recommended interventions:

0 - 15%: Uncritical

15 – 25%: Observation of further development Over 25%: Adjustment of dry cow management

Overview 2: BHB value for individual cows

Dato	igontitrir eq Ma	M11. 1	Fedt		Protein		EKM kg loge fra kælvn			внв 📙	
		Mælk kg 🖣	%	Gram	%	Gram	ENM kg loge	je IIa Kælvri Cel	elletai peir	Urea (el)	BHB _
12/12/2013		35.1	4.03	1415	3.20	1123	34.7	56	58		0.076
27/11/2014	ς <u>Τ</u>	0.0	0.00	0	0.00	0	0.0	406		0.0	
21/11/2013	JE	34.5	4.19	1446	3.15	1087	34.6	35	45	:	0.014
04/03/2014	JE	34.5	3.04	1049	3.32	1145	30.2	138	60	:	0.015
07/04/2015	< I	57.0	2.52	1436	2.90	1653	44.5	39	47	:	0.096
30/01/2014	JE	30.9	2.76	853	3.28	1014	25.9	105	74	:	0.042
09/10/2014	JE	19.3	3.04	587	3.52	679	17.2	357	215	:	0.091
13/05/2014	J.E	30.1	3.17	954	3.26	981	26.7	208	710		0.100
12/08/2014	J I	35.2	3.15	1109	3.39	1193	31.5	299	842	:	0.063



^{*}Calculation includes the last freshening cows from last 2 DHI testings

^{**}Minimum of 10 animals required for calculations

KETOSIS SCREENING – SUMMARY



Simple, practical & at low cost

Highly valuable tool

Communication of tool is key

FATTY ACID PROFILING

Human nutrition – value added products

Animal health/feeding management



AVAILABLE CALIBRATIONS

Chain length

- Short Chain Fatty Acids (SCFA): C_{4:0}, C_{6:0}, C_{8:0}, C_{10:0}
- Medium Chain Fatty Acids (MCFA): C_{12:0}, C_{14:0}, C_{16:0}
- Long Chain Fatty Acids (LCFA): C_{18:0}, C_{18:1}, C_{18:2}

Degree of unsaturation

- Saturated Fatty Acids (SFA)
- Mono Unsaturated Fatty Acids (MUFA)
- Poly Unsaturated Fatty Acids (PUFA)
- Major fatty acids (C14:0, C16:0, C18:0, C18:1 total)



FATTY ACID PROFILING - SUMMARY



Human nutrition:

- Optimised processing at dairy plant
- Modification of fatty acid profiles by feeding

Cow's health/feeding status:

- Fertility & fatty acid profile
- Ketosis & fatty acid profile
- Others



TRENDS IN DHI TESTING WORLDWIDE

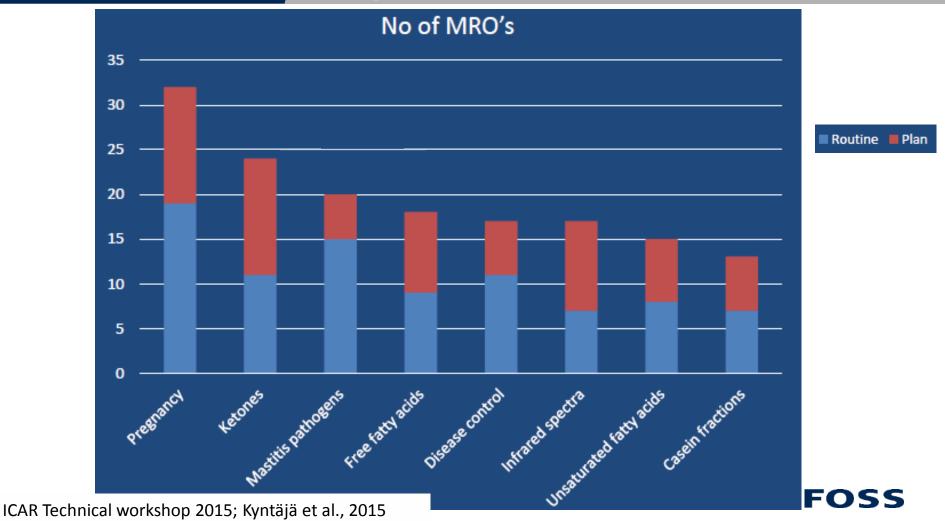
incorporating the collaboration and feedback

Indicator	Number
Dairy cows covered in the questionnair	re 21,486,116
Number of recording organisations	287
Number of milk-analysis laboratories	169
Number of organisations that complete questionnaire	ed the 46
	covers most of the important ICAF oss the World.
	included 106 questions covering portant phases of milk recording,

project.

of milk-recording organisations involved in the **FOSS**

TRENDS IN DHI TESTING WORLDWIDE



ELEVATED ATTRACTIVENESS OF DHI **TESTING**

Milk samples harbour a lot of information!

DSCC as biomarker for improved mastitis screening

New(er) FTIR parameters offer new opportunities

For further information: das@foss.dk







Perten and Delta Instruments:

Complete Dairy Analysis

A presentation for: NALMA-North American Lab Managers ASSN September 12, 2016





Presentation Overview

- Perkin Elmer, Perten Instruments and Delta Instruments
- Perten Instruments Background
- Intro to the New Delta and Perten Instruments
- Delta Instruments Product Line
- Products for the CMT and DHI Lab
- Delta Innovation
- Questions





PerkinElmer Companies



- PerkinElmer is a global leader focused on improving the health and safety of people and the environment.
- More Than 75 Years of Innovation
- Head Office: Waltham, Massachusetts, United States
- NYSE: PKI Sales of 2.2 Billion in 2015



- Acquired by PerkinElmer in 2014
- Founded in 1963 by Harald Perten
- Specialists in quality control of grain, flour, food and feed
- U.S. Headquarters in Springfield, IL
- Canadian HQ Winnipeg, MB



- Acquired by PerkinElmer in February 2016
- Founded in 1985
- Well-established manufacturer of rapid routine analytical instrumentation for the analysis of milk and milk derivatives
- Head Office: Drachten, the Netherlands





Perten Instruments Overview



50+

years in the instrument business

25,000+
instruments installed
in Food & Ag





Provide complete solutions – Service, Support, Applications



Part of the PerkinElmer group

15%

of Total Revenue placed back into R &D.





Perten's History



1961

First instrument for Falling Number developed by Harald Perten and Sven Hagberg



1962

Founding of Perten Instruments



1968

Falling Number Method ICC Approval



1971 Glutomatic

gluten quantity analyzer ICC Approval for the Gluten Index Methhod



1981

Inframatic 8100 NIR



1991

On-line NIR flour and grain analyzers



1994

Inframatic 9100

- Whole Grain NIR

Approval by PTB

in Germany



1994

Single Kernel Characterization System (SKCS) – developed with the USDA



1995

DA 7000– First commercially available diode array based NIR



2003 DA 7200

2nd generation diode array



2005 AM 5100

– 1st high frequency grain moisture meter



2007

doughLAB and RVA

- Acquisition of Newport

Scientific



2008 DA 7300

On-line NIR diode array



2010

IM 9500

- 3rd generation NIT instrument for
Whole Grain anlaysis



2011

TexVol– Acquisition of
TVT Texture and BVM
Volume Analyzers



2012

AM 5200

- Approved for official
grain moisture
inspection in US



2012

DA 7250

- Launched 3rd generation with NEW software platform



2015

DA 7440

- Process NIR
Instrument





February 2016

- Acquisition of Delta Instruments
- A worldwide leader in the design, production and sales of liquid dairy analyzers for component analysis and somatic cell monitoring
- Markets served include: all liquid dairy processors, government/regulatory and central milk testing labs







Benefits of Delta-Perten Instruments

- Central location for parts distribution, Applications Support, and Customer Service
- Creation of a much larger enterprise focused exclusively on Dairy, Food and Agriculture
- Quick Lead Times (Next Day) for most parts and service requests
- Increased Service Technicians from 2 to 15. These are both centrally located in Springfield, IL and regionally located to decrease time customers wait for service
- 15% of annual sales are returned to R&D to develop new and improved technologies that help our customers have an edge in the market
- Full Service Applications Lab in Springfield, IL
- University partnerships with Cornell University, SDSU, The Miner Institute, UC-Davis





Perten-Delta Service and Support







Perten Instruments is now a full service partner for all dairy customers providing *Complete Analysis Solutions* for raw ingredients, in process, and final product



Liquid Analysis

AOAC Approved IR for Components

USDA Approved somatic cell

Any liquid dairy product from 0-65% solids



Solid Analysis

Analytical and Process NIR

Compositional Analysis

Functional Analysis

Complete Analysis Solution

- Raw and In-Process
 Ingredient Standardization
 to optimize profit
- Online and Final Product QC to insure quality



Delta Instruments Product Line

- LactoScope
- Mid-IR Based Spectrometer calibrated for dairy component analysis
- SomaScope
- Flow Cell Cytometry based analyzer used for counting somatic cells in raw milk









Solutions for CMT and DHI Labs







Delta Instruments Process Instruments

- CombiScope
- Combines our FTA and SomaSmart in an automated configuration that can handle up to 600 samples per hour
- USDA and AOAC Approved.
- Low cost per sample and high accuracy, especially at low level components such as: MUN, casein, fatty acid profile







Perten Dairy Analyzers

11 Different Analyzers Dedicated to Dairy



Lab/At-line NIR

Compositional

(moisture/TS, fat, protein etc.)



DA 7300 In-line NIR



DA 7440Over-belt NIR

Functional

(rheology, viscosity, melt tests, texture etc.)







Analyzers





Delta and Perten Innovation

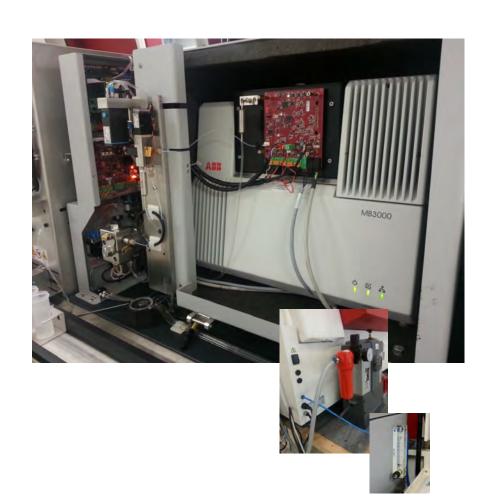




Optics

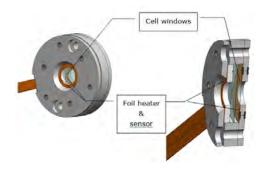
Low Maintenance, High Performance FTIR Bench

Fixed Spectrometer











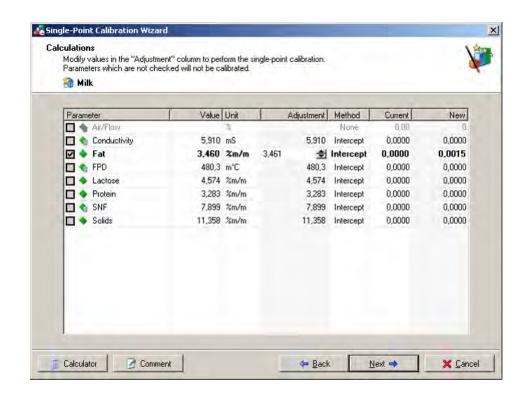
STC™ - THE HEART OF LONG TERM STABILITY & PERFORMANCE

- PATENT PENDING
- 36 Micron SAMPLE CELL TEMPERATURE CONTROL
- INTAKE SAMPLES FROM 35 °C TO 41 °C
- MAINTAINS STABILITY OF SPECIFICATIONS AT 600 S/H

Unlimited Calibration Models

All included at no extra cost

- Fat (A & B)
- Protein
- Lactose
- Total Solids
- SNF
- NPN
- Freezing Point Depression
- Saturated Fatty Acid
- Unsaturated Fatty Acid
- Polyunsaturated Fatty Acid
- Mono Unsaturated Fatty Acid
- C16, C18, C18:1 cis 9,
- Short, Medium or Long Chain Fatty Acid
- Total Unsaturated cis
- Total Unsaturated trans







Automated CombiScope FTIR A600 HP



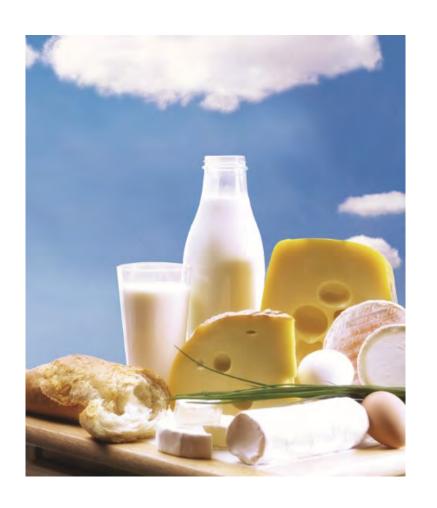
 Delta and Perten Instruments have innovated turn-key automated Combi System available for high volume labs





Complete Analysis Solutions

Perten Instruments' goal is to be the preferred partner for complete analysis solutions to Central Milk Testing and Dairy Processors Worldwide.







NALMA 2016 Tools to help grow your lab business



Topics

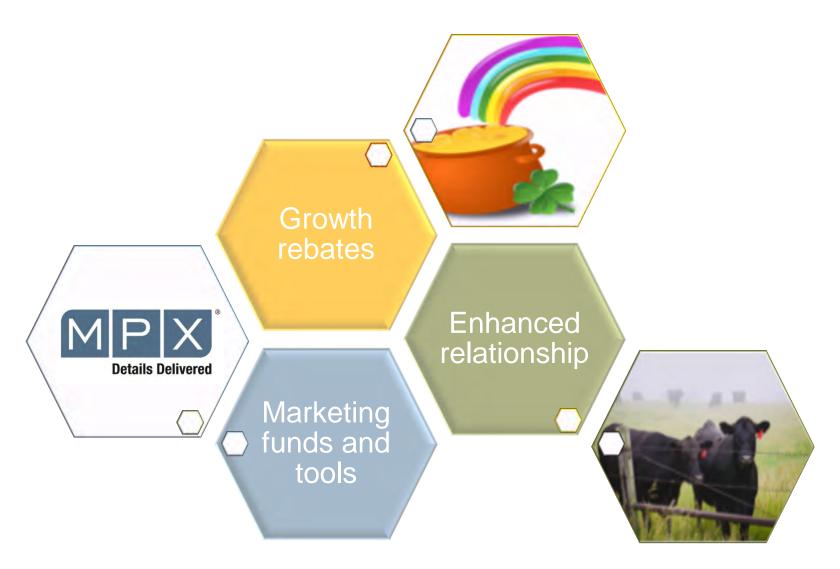
- Ahead of the Herd
- IDEXX Milk Pregnancy Fall New Customer Program

Ahead of the Herd





What's in it for me?



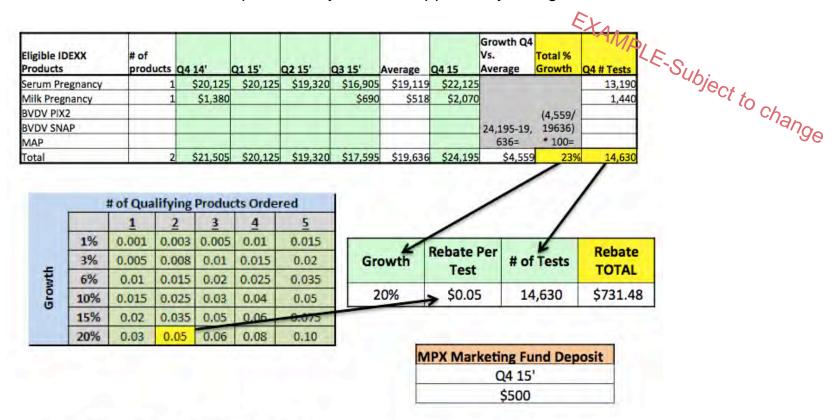
Growth rebate

- Laboratories will receive a rebate in the form of an account credit after each quarter based on their percent growth* of qualified IDEXX products during that quarter.
 - Qualified products:
 - IDEXX Milk Pregnancy Test
 - IDEXX Bovine Pregnancy Test
 - IDEXX Rapid Visual Pregnancy Test (*minimum 4 kits to qualify for product tier)
 - IDEXX BVDV PI X2
 - IDEXX SNAP® BVDV Antigen Test (*minimum 150 tests to qualify for product tier)
 - IDEXX MAP Ab Test (Johne's Disease)
 - Each product purchased enters the laboratory into a higher credit tier.
 - Percent growth is calculated quarterly and based on a running four quarter average.



Enhanced relationship

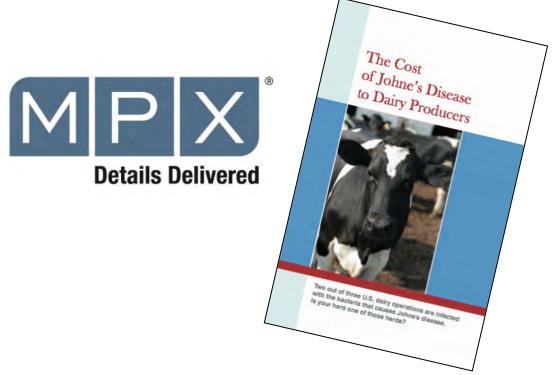
- Reporting
 - Quarterly updates available through sales representative after the close of each quarter
 - Collaborate with sales rep to identify areas of opportunity and growth

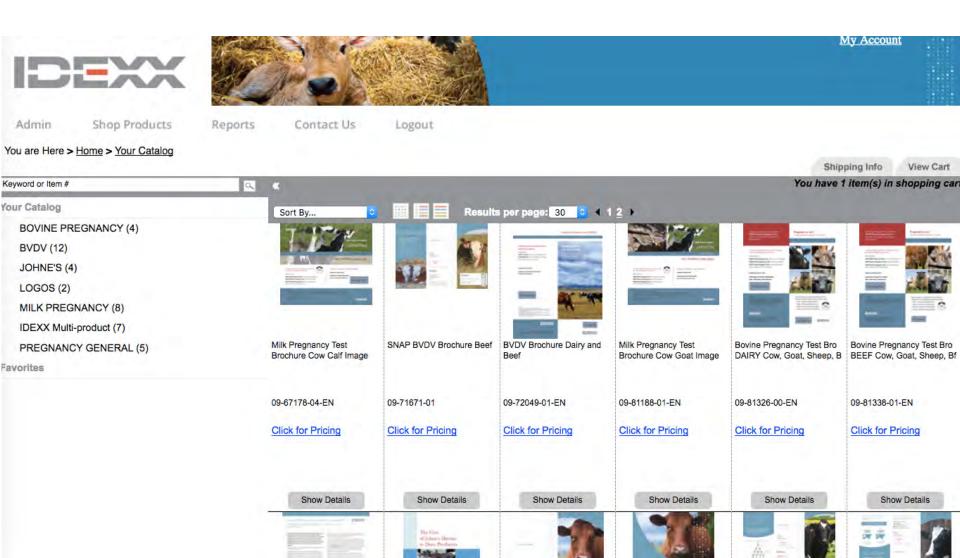


Marketing tools

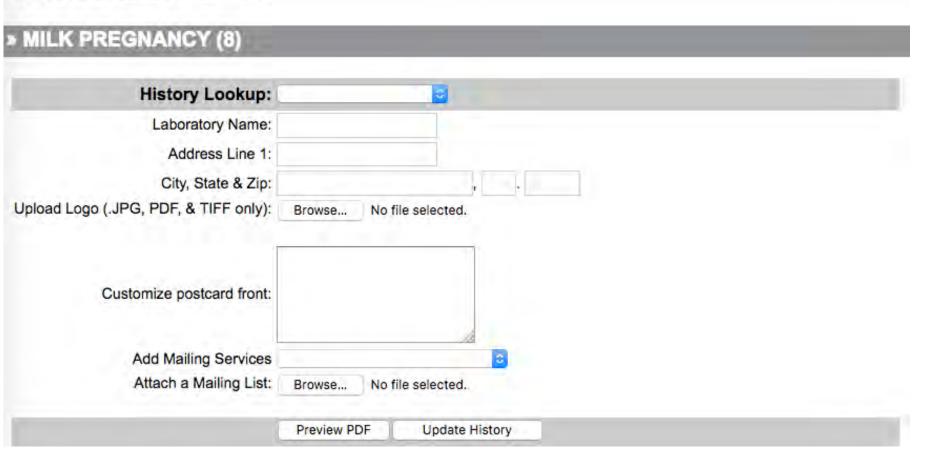
- Labs may utilize MPX portal to customize and order materials at their convenience.
 - Customize with lab logo and contact information.
- Logos and customized ad files are available for download on MPX portal at no charge.
- MPX portal provides printing and mailing capabilities.







You are Here > Home > Your Catalog





Confirm pregnancy with milk.



Customize your postcard here. This space is for you to customize your postcard.

Add the IDEXX Milk Pregnancy Test to your current milk recording samples.





Pregnant cows are profitable cows

Add the IDEXX Milk Pregnancy Test to routine milk-quality samples* to:

Identify open cows accurately and easily

- Confirm pregnancy as early as 28 days postbreeding and 60 days postcalving
- · Avoid additional animal handling and labor

Confirm pregnancy with confidence

- Rely on accuracy similar to palpation and ultrasound¹
- Use trusted ELISA technology for reliable, laboratory-based results

Work closely with your veterinarian

- Develop a reproductive management program
- Implement a proactive and preventive herd health program

Laboratory Name Here Address Line 1 Here City, ST 12345

*Samples can be fresh, frozen or preserve

*Performance of the ICEX Milk Programcy Test was determined by comparing test results for those from ultrasound and palpation (N=1,315 covel). Recharder were not included in performance outsidetions. See ICEX Milk Programs (Test Validation Data Fescol for Milk feet performance data?

I Data on file at IDEXX Laboratories, Inc. Westbrook, ME USA.

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Maine Labs
Call for pricing:
1-800-867-5309

Test with Confidence

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All 977M marks are owned by IDEXX Laboratories, Inc. or its affiliates in the United
States and/or other countries. The IDEXX Privacy Policy is available at Idexx.com.

Ask for these IDEXX herd health and pregnancy tests:

IDEXX Milk Pregnancy Test IDEXX Bovine Pregnancy Test IDEXX MAP Ab Test IDEXX BVDV PI X2 Test









Test with Confidence

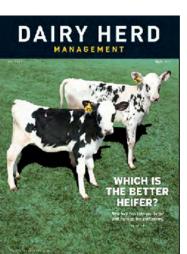


CONTRACTOR AND CONTRACTOR AND CONTRACTOR

11 ghts reserved.

Industry publications (print/digital)



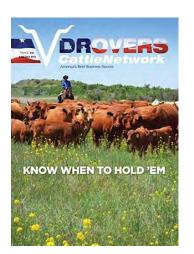














Laboratory Locator Tool

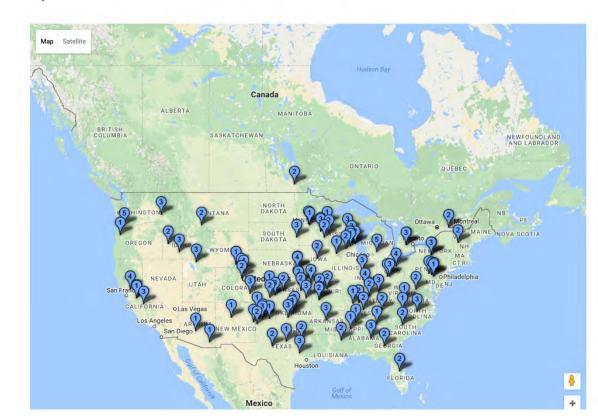
 Enables customers to locate labs that provide IDEXX bovine herd health and pregnancy tests

Locate a Laboratory in North America

IDEXX partners with the best laboratories in North America to provide you with excellent customer service. Choose a laboratory on the map below to view the IDEXX tests available at that location.



Blue icons indicate the number of IDEXX bovine products offered at each laboratory location.

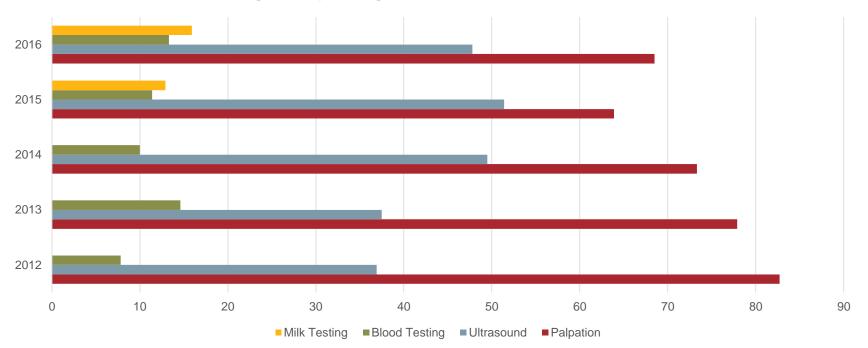


Participation

- Interested?
 - Contact you regional sales representative to review the program in detail

IDEXX Milk Pregnancy Test Changing Behavior

Pregnancy Diagnosis/Detection Used (%)



*Hoard's Continuing Market Study, 2012-2106

Fall New Customer Free Milk Pregnancy Promotion Sneak Peak

- Promotion Goal:
 - Grow trial of IDEXX Milk Pregnancy Testing among dairy producers
 - Continue to build the IDEXX/Lab Partner relationship and find ways to grow together
- Promotion Guidelines
 - To participate you must be signed up for Ahead of the Herd
 - To receive free kits, you must work with the IDEXX Sales Representative to complete a new customer mailer focused on new customer trials to >100 customers
- Promotion Timing:
 - October 1st through December 31st
- Next Steps:
 - Your IDEXX Sales Representative will work with you the week of Oct 3rd and have more details

Fall New Customer Free Milk Pregnancy Promotion Mailer Example



Pregnant cows are profitable cows

Add the IDEXX Milk Pregnancy Test to routine milk-quality samples* to:

Identify open cows accurately and easily

- Confirm pregnancy as early as 28 days postbreeding and 60 days postcalving
- · Avoid additional animal handling and labor

Confirm pregnancy with confidence

- Rely on accuracy similar to palpation and ultrasound[†]
- Use trusted ELISA technology for reliable, laboratory-based results

Work closely with your veterinarian

- Develop a reproductive management program
- Implement a proactive and preventive herd health program

Maine Labs

11 Example Rd. Westbrook, ME 04092

Samples can be fresh, frozen or preserved

¹ Performance of the DEXX MIX Programcy Test was determined by comparing set treating to those from ultrasound and palpation (Nr. 1,36 cover). Rechards were not included in performance calculations. See DEXX MIX Programcy Test Middaton Data Report for full test performance data.

1. Data on Re-attDEXX Laboratories, Inc. Weatbook, ME-USX.

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Customize this area

Questions?

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Bovine pregnancy tests



September 12th, 2016



™Mission



To develop, produce and market new animal reproduction technologies to better address the needs of the producer.



Company

- Located in Beaumont, Quebec
- 3 divisions
 - Manufacturing
 - Service laboratory Diagnostic
 - R&D



*Conception's products

Blood pregnancy tests

- DG29®
- DG•Blue Eyes® visual rapid test

Milk pregnancy test

DG·Lait/Milk®



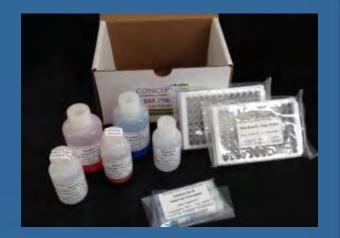


*How it works!

- Based on the presence in blood or milk samples of a protein marker of bovine pregnancy (confidential information)
- Blood or milk samples
 - from 28 days or more after breeding
 - ≥90 days after calving.

Kits include

- modular coated ELISA plates
 - (12 X 8 strips/plate)
- ready-to-use reagents







Blood Pregnancy Test DG29®

First company in the world to commercialize a blood pregnancy test, the DG29® back in 1999

- User friendly
- Quantitative assay with standard curve points (OD)
 - Evaluate risk of embryo mortality
- Results within 2h30
- Report software
 - Generates and transmits client's report automatically
 - Report customized with your logo



DG29® multi-species





Proven Accuracy of DG29®



Agence canadienne d'inspection des aliments

Canadian Food Inspection Agency

2006 BSE Crisis:

- ■CFIA recognized DG29® as the only blood pregnancy test approved to determine the pregnancy status of cattle to be exported to the USA.
- ■DG29® test is over 99% accurate as early as day 29 of gestation for identification of open females

Research published in the Canadian Veterinary Journal



*DG29® test performances

Sensitivity	Specificity	Accuracy	False positive	False negative
99.7%	96.5%	98%	2.6%	≤0.1%

Compared to ultrasound results

- •Nakamura et al., (2012), Reproduction, Fertility and Development 24
- •Paré et al., (2008), Can Vet J

When the test shows negative result, the producer can rest assured that this particular cow is open and that he/she can submit her to a strategy for rapidly returning her to AI



DG•Blue Eyes® - Rapid visual test

- Bovine blood ELISA pregnancy test kit
- No requirement for sophisticated laboratory (ELISA) equipment
 - For use directly at the farm or in non-ELISA equipped laboratory
- Visual interpretation of results by color changes in reaction wells.
- > 30 minutes
- High level of accuracy (similar to DG29®)





DG•Blue Eyes® - Rapid visual test

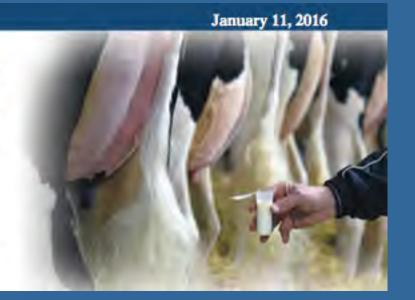




DG • Lait / Milk®

Conception innovates and launches a new milk pregnancy test,
the DG Lait/Milk®

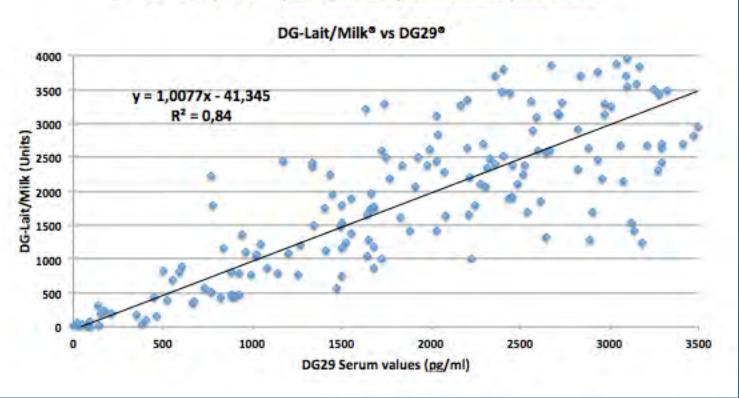
The company Conception is proud to announce the launch of its new product, the DG-Lait/Milk®, a bovine milk pregnancy test producers can use at their convenience starting on the 28th day after breeding.





DG•Lait/Milk® vs DG29®

Relationship between milk and serum concentrations of Conception pregnancy-related protein *





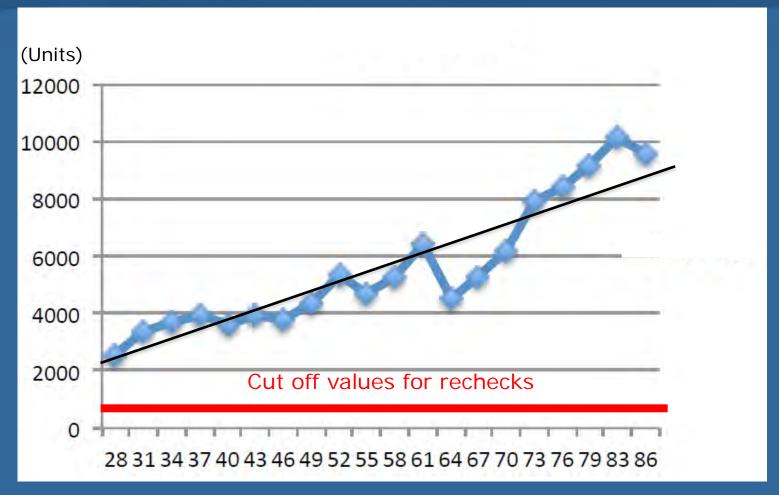
DG•Lait/Milk® test performances

		DG29® Serum test		
		Pregnant	Open	
		(n = 210)	(N = 114)	
	Pregnant	209	0	
DG •Lait/Milk®	Open	0	113	
	Recheck	1	1	

Sensitivity ≥98%; Specificity ≥98% Overall rechecks = 3.4% (12/349 samples)



Protein profile DG•Lait/Milk®



Days of gestation



- NO.

Conception's Pregnancy Tests

Canada

- •Used coast-to-coast by 4500+ Dairy producers
 - Directly available to producers through sales representatives
 - Sample analyses at Conception's Lab in Beaumont, Quebec









Marketing Partner in USA

Partnership







Sub-license







International sales

France, China, Turkey, Greece, South Africa, United Arab Emirates, Morocco



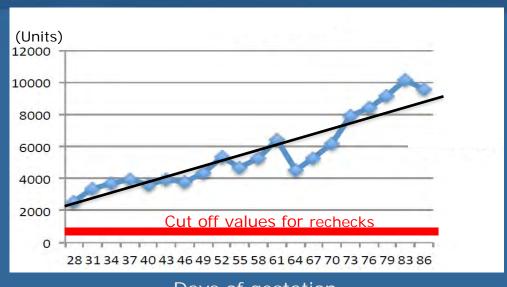


Conclusions

- Very accurate blood and milk pregnancy tests
 - ▶ DG29[®], DG•Blue Eyes[®], DG•Lait/Milk[®]
 - Quantitative tests (DG29[®], DG•Lait/Milk[®])
 - Assessment of embryo mortality
- ≥ ≤3.5% rechecks, many of which are an indication of an embryo at risk (i.e. low protein concentration)



→ DG•Lait/Milk® Added Value



Days of gestation

Very accurate to identify open cows
 from 28 days after breeding up to calving
 ▶Including the period from 28 to 60 days after breeding since there is no decline in the protein marker



Expand your business!

Exchange rate is on your side
\$ CAD 100 = \$ US 77
\$ CAD 130 = \$ US 100



Telephone: 418.838.0772

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Certification of DHI Laboratories in North America

Paul Sauvé
Canadian Laboratory Services
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Canada

- Approximately 11,500 dairy producers
- 1.4 million cows (120)
- Production 8m metric tons

USA

- Approximately 53,000 dairy producers
- 9 million cows (170)
- Production 88m metric tons

Mexico

- Approximately 125,000 dairy producers
- 3 million cows
- Production 11m metric tons



Canada

- 7 DHI Laboratories
- 5 private, 2 provincial government
- 6 involved in other activities (commercial testing, regulatory testing)
- Foss, Bentley

USA

- 41 DHI Laboratories
- Mostly private
- ~20 involved in other testing activities
- Foss, Bentley, Delta

Mexico

- 4 DHI laboratories
- 3 associated with a large dairy coop are involved in other testing activities
- Foss, Delta



Other Testing Activities (North American DHI Laboratories)

RAW MILK TESTING

- Commercial (payment) testing
- Reference testing (calibration)
 - Mojonnier fat
 - Kjeldahl protein
 - HPLC lactose
 - FAO total solids
- Milk urea nitrogen
- Johnes screening
- Pregnancy
- Ketosis (acetone, BHB)
- Regulatory testing
 - Bacteria (CFU and IBC)
 - Added water (cryoscope and IR)
 - Veterinary drug residues
- DNA testing (PCR)
- Iodine (Mass Spec)

FORAGE ANALYSIS
WATER ANALYSIS (well and waste water)
OTHER DAIRY / FOOD PRODUCTS



Certification / Accreditation

Canada

- ISO17025 (Can-P-4-E)
- Canadian Laboratory Accreditation Program
- Canadian Laboratory Services / Standard Council of Canada
- Management and technical requirements

USA

- Council for Dairy Cattle Breeding Auditing Guidelines
- Quality Control Services (QCS)
- Primarily technical requirements

Mexico

- Council for Dairy Cattle Breeding Auditing Guidelines
- Quality Control Services (QCS)
- ISO17025 (one lab)
- Primarily technical requirements











Management Requirements

- Organizational structure
- Management System
- Document Control
- Requests, tenders and contracts
- Subcontracting
- Purchasing and Supplies
- Customer service
- Complaints
- Control of nonconforming work
- Ongoing improvement
- Corrective actions
- Preventive action
- Control of records
- Internal audits
- Management reviews











Technical Requirements

- Personnel (qualifications and training)
- Accommodation
- Environmental conditions
- Test methods
- Method validation
- Equipment
- Measurement traceability
- Measurement uncertainty
- Sampling
- Handling of test items
- Quality assurance
- Reporting of results



Certification / Accreditation

Canada

- Accreditation
- On-site reassessment every 2 years
- Additional on-site or off-site (document) reviews as required

USA

- Certification
- On-site audit every 2 years
- Additional on-site or off-site (document) reviews as required

Mexico

- Certification
- On-site audit every 2 years
- Additional on-site or off-site (document) reviews as required



Reasons for Supplemental Visits / Document Reviews

- Scope addition
- Relocation / Renovation
- Significant equipment changes
- Significant staff changes
- Follow-up from a previous visit
- Performance issues (proficiency testing)
- Follow-up to complaint(s)
- Request from organization



Proficiency Testing (PT)

- Proficiency testing is used to monitor the performance of accredited / certified laboratories.
- A PT provider prepares and ships samples to participating laboratories.
- Samples are tested and results submitted prior to an established deadline.
- Defined tolerances are used to identify analytical deficiencies.
- A performance report is prepared and delivered to participants.

Proficiency testing is NOT a "policing" activity. It is intended to assist with identification and correction of potential problems.



Canada

- Outlined in the "Canadian Laboratory Accreditation Program" summary.
- Overall coordination: Canadian Lab Services
- Sample Preparation: Canadian Lab Services
- Reporting: Canadian Laboratory Services

- Outlined in the "Council of Dairy Cattle Breeding" auditing guidelines.
- Overall coordination: Quality Control Services
- Sample Preparation: Eastern Lab Services
- Reporting: Canadian Laboratory Services and Quality Control Services



Canada

- Samples provided monthly:
 - Six times yearly on a predetermined schedule;
 - Six times yearly unannounced (rapid turnaround);
 - Alternating months.
- Scheduled samples: Sets of 20 (10 blind duplicates)
- Unscheduled samples: Sets of 10

- Samples provided monthly on a predetermined schedule.
- Sets of 24 (12 blind duplicates)



Performance Assessment (statistical indicators)

MD (mean difference)

The average difference between instrument results and reference values across a single sample set.

SDD (standard deviation of differences)

A measure of the dispersion of differences between instrument results and reference values across a single sample set.

RMD (rolling mean difference)

The average of mean differences across multiple trials.



Tolerances - FAT

Canada

- MD < +/-.035% and SDD < .040% in three of the last four trials
- RMD < +/-.015% in the last six trials

- MD < +/-.040% and SDD < .040% in three of the last four trials
- RMD < +/-.020% in the last six trials



Tolerances - PROTEIN

Canada

- MD < +/-.025% and SDD < .040% in three of the last four trials
- RMD < +/-.010% in the last six trials

- MD < +/-.040% and SDD < .040% in three of the last four trials
- RMD < +/-.020% in the last six trials



Tolerances - SCC

Canada

- M%D < +/-7% and SD%D < 10% in three of the last four trials
- RM%D < +/- 5% in the last six trials

- M%D < +/-10% and SD%D < 10% in three of the last four trials
- RM%D < +/-5% in the last six trials



Questions?

