valacta

THE PASSION OF **BUSINESS LEADERS**

THE EVOLUTION OF VALACTA ATLANTIC DAIRY PRODUCTION

2018 STATS & TIPS

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THE LATEST NEWS!

Lactanet: Integrating Herd Management and Genetic Services

As I write this article, we have recently finalized the LACTANET partnership project between Valacta, CanWest DHI and CDN (Canadian Dairy Network). On April 16th and 17th, a large-scale press release announced the creation of Lactanet and the partnership was presented at the DFQ annual general meeting. In 2006, DFQ (which we called the Fédération des producteurs de lait du Québec at the time) believed it was essential that Valacta be developed as a centre of expertise to meet the increasingly specific needs of dairy producers. The uniqueness of Valacta's database and services defined this management and development tool as a centre of expertise for the entire dairy sector. The evolution of Valacta, dairy production centre of expertise, to Lactanet, Canadian network for dairy excellence, will respond to the future needs of our producers and the industry from coast to coast.

Valacta's shareholders (DFQ, McGill University and MAPAQ) have endorsed this partnership, aspiring to support dairy producers across the country by gradually offering them the integrated expertise of the three partners. We thank them for being open to the concept that in order to meet contemporary challenges, combining the strengths of these three partners is the most promising path to the future for the dairy producers across Canada. The Atlantic Advisory Committee will keep its role of providing support to the development of services beneficial for milk producers of the four provinces.

They say that together, we are stronger and that is the main objective of this historic agreement that integrates milk recording activities, herd management services, knowledge transfer and genetic evaluations; a combination with a competitive advantage that is unique worldwide. This modern and progressive partnership will gradually become the leading provider of herd management solutions and knowledge to support the development of a prosperous and sustainable Canadian dairy industry.

We invite you to visit the partnership portal at **www.lactanet.ca** and watch the introductory videos available on the homepage.

The contents of the Evolution of Dairy Production report on the year 2018, therefore we will only be able to cover Lactanet activities in next year's edition.

From coast to coast, our customers have the passion shown by business leaders. We have focussed only on a few of them in the interviews that are featured in this publication. We congratulate them especially and we salute all of you.

From left to right: Canadian Dairy Network Chair Mr. Norm McNaughton, CanWest DHI Chair Mr. Ed Friesen and Valacta Chair Mr. Pierre Lampron.

PIERRE LAMPRON
Dairy Producer,
Chairman of Valacta

A WORD FROM JEFF GUNN

We are pleased to present Part 2, Stats and Tips, of our Dairy Evolution Annual report entitled "The Passion of Business Leaders". In the following pages, you will not only find interesting articles from some of our experts at Valacta, but you will have the opportunity to read about how our top Herd Performance Index herds in Atlantic are achieving their results. I am sure you will notice in these interviews the passion these leaders have for their business, for their employees, and for being the best they can be in every management and financial aspect. Many of you keep telling us that you want to better understand how the top-performing herds are getting the kind of numbers they are. Our hope is that these interviews and some of the tables and benchmarking you will find as you flip though the pages, will shed some light on this question.

In keeping with this theme, we continue to work with industry groups, research institutions, and government to not only demonstrate the power of using the data to manage and optimize herd performance, but to use the data to generate benchmarking for best management practices, efficiency and profitability. We realize that with the challenges we currently face in this great industry of ours, profitability is key. We will focus more on tying economics to the performance numbers we provide, putting more tools in our advisors' toolboxes to aid in this.

Finally, I want to echo President Pierre Lampron's message about Lactanet, the exciting partnership with CDN, CanWest DHI, and Valacta. We have always worked closely with these industry partners, but I am already seeing the signs of how this partnership will encourage more synergy among the three organizations, for the ultimate goal of providing maximum value to the customer. I believe that the expertise, resources, and management tools that ***Lactanet*** collectively now brings to the table will certainly help with the future success of the Canadian dairy industry, and I am proud to be a part of it.

If you have any questions about what you see or read in the following pages, or if you have questions about our services - technical or advisory, please do not hesitate to contact me. I wish you all a successful planting and harvest season.

JEFF GUNN
Atlantic Regional Manager

Valacta with You at…

A group of producers and industry partners brought together as a focus group in Atlantic at the PEI Analytical Lab on Friday, April 26th. The topic was Valacta reports and the objective was to get feedback from the users of the Valacta reports so that we can improve upon what we have.

March 22 – Rumen workshop in Miscouche, PEI. A great group with great discussion! Here is Gabrielle Guitard, Strategic Advisor, demonstrating a Penn State analysis on a sample from Tiny Acres Farm.

March 20 – Barbara Paquet, president of Lactanet, presenting to the National Holstein Convention AGM on the partnership.

Valacta was present at the Farm Mechanization Show held on March 7-9, in Moncton NB.

March 25 - Rumen workshop in Antigonish, NS. Another fabulous turnout to hear Strategic Advisor Gabrielle Guitard discuss the importance of maintaining a healthy rumen to optimize animal performance and profit!

March 21 – Rumen workshop in Summerside, PEI. Another great turnout.

IT'S SIMPLE MATH

THE AVERAGE COST OF CLINICAL MASTITIS PER CASE HAS BEEN EVALUATED AT US$444.[1]

Almost 1 in 4 cows suffer from clinical mastitis each lactation cycle and coliform bacteria are frequently the cause.[2]

VACCINATE YOUR HERD AGAINST CLINICAL COLIFORM MASTITIS WITH ENVIRACOR® J-5.

A 3-dose vaccination program with enviracor j-5 leads to:

- Up to an 80% reduction in clinical coliform mastitis[3,4,5]
- Up to a 41% reduction in the duration of clinical mastitis in cows that get sick[6]
- Extended protection throughout the first 100 days of lactation[3,4,5]

TO FIND OUT HOW ENVIRACOR J-5 CAN HELP YOU PREVENT CLINICAL COLIFORM MASTITIS IN YOUR HERD, TALK TO YOUR VETERINARIAN.

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zoetis

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By JEFF GUNN, Atlantic Regional Manager, Valacta

Lone Willow Farm, Alan and James Cook, Bridgetown, Nova Scotia

Top Herd Performance Index in Atlantic Canada and 16th in Canada

Q1 TELL US ABOUT THE HISTORY OF YOUR FARM AND HOW YOU GOT TO WHERE YOU ARE TODAY.

Alan: "We moved from a farm in the Bridgewater area 15 years ago where we were milking sixteen cows, and bought an existing operation (the farm we are on today), milking forty cows. Eventually, we increased to fifty cows which is the number we have stayed at over the last few years. We have continuously increased our quota, while cow numbers have stayed virtually the same. We farm 320 acres, producing our own forages, corn for corn silage and dry corn, and

Alan Cook of Lone Willow Farm in Bridgetown, NS.

"**Animal health is very important to us** and we believe we achieve top performance by paying close attention to areas like cow comfort, udder health, forage quality and transitions."

- Alan Cook

some wheat for straw. We feed a total mixed ration from two bunker silos, which we constructed three years ago. We milk the cows in a De Laval double-four, herringbone parlor. I farm with my son, Carter who is seventeen years old. We also have a young student, Ethan Corkum, who helps with milking and have had Peter Roosje as a hired hand for a number of years."

Q2 WHAT MANAGEMENT PRACTICES DO YOU BELIEVE CONTRIBUTE TO YOU HAVING ONE OF THE TOP PERFORMING HERDS IN NOVA SCOTIA?

Alan: "Animal health is very important to us and we believe we achieve top performance by paying close attention to areas like cow comfort, udder health, forage quality and transitions. We use a team approach with our veterinarian, nutritionist, hoof trimmer and Stirling Dorrance (our Valacta Advisor). We believe that if we look after these areas with the expertise we have on our team, things like reproductive performance will be optimized. Our veterinarian does herd health every two weeks. We feel that if our animals are healthy and consistently receiving fresh, high quality forages, dry matter intake is maximized and the cows get bred back efficiently. It is all related. We are constantly tweaking little things and talking to the experts within our team to make improvements. For example, last year we purchased a bunk defacer to ensure that we are feeding out a quality ration at all times. We use the data such as forage analyses and Valacta test-day data to ensure we can better manage herd performance. We follow a balanced breeding program, focusing on longevity, durability and health. Our people are very important to our success. Good people – people that know how to work – are hard to find. You have to treat people like you would treat yourself. They need to be involved in the decision-making. We also try not to think about things we can't control – it is not always easy, but we try to focus on what is within our control."

Q3 WHAT ARE YOUR GOALS GOING FORWARD?

Alan: "We want to maximize output per cow or per stall. We want to be as efficient as we can and we want to be profitable."

Q4 WHAT DO YOU FEEL ARE YOUR GREATEST CHALLENGES?

Alan: "Labour. Finding good, hard-working people is a big challenge. The other challenge is tighter margins. We have to focus on being as efficient as possible."

Q5 WHY ARE YOU A VALACTA CUSTOMER? WHAT DO YOU NEED AND EXPECT FROM VALACTA TO HELP YOU MEET THESE CHALLENGES AND ENSURE THE FUTURE SUCCESS OF YOUR OPERATION?

Alan: "We are constantly looking to improve and we need sound, accurate information to do this. Valacta tools like SCC, Transition Cow Index®, Ketolab and MUN are important to help us monitor individual animal and herd performance. Valacta plays an important role as part of our advisory team, working with our nutritionist, veterinarian, and hoof trimmer. We need more expertise from Valacta on forages, feeding and bunk management. Our future success depends on how we use the expertise we have access to, and Valacta is part of that."

HERD PERFORMANCE INDEX

The HPI uses a scoring system that divides a total of 1,000 points across 6 management areas.

The points are allocated as follows:

- Milk Value **500** points
- Age at first calving **100** points
- Herd efficiency **100** points
- Longevity **100** points
- Udder health **150** points
- Calving interval **50** points

By MARIO SÉGUIN, Dairy Production Expert – Milk Recording and Data Management, ANNE-MARIE CHRISTEN, Project Coordinator and PIERRE PLAMONDON, Dairy Production Advisor, Valacta

A Word on Strategic Data

Milk recording provides a number of different performance reports, and some are more meaningful than others. Some of the information is considered to be "strategic", because it can have a significant impact on the profit margin of your dairy operation. Among the most important numbers are production data, age at first calving, and udder health.

PRODUCTION DATA

When it comes to herd profitability, production is paramount. Analyzing indicators like peak milk yield, persistency, days in milk (DIM), and changes in milk production can help you identify opportunities to increase production.

Peak milk yield

Peak yield is a good predictor of how much milk a cow will produce during a given lactation. Research shows that a 1 kg decrease in yield at peak lactation is equivalent to an average loss of 175 to 220 kg of milk over a lactation with normal persistency. Benchmarks for different breeds and peak yields can be used as guidelines. If your peak yields are not currently meeting your expectations, you might want to consider involving your dairy production technician to help you find solutions. Adjustments to body condition, rations for lactating and/or dry cows, or cow comfort may be the answer.

TABLE 1. AVERAGE PERSISTENCY (%) BY NUMBER OF DAYS IN MILK AND BREED

Days in milk	Holstein	Jersey	Brown Swiss	Ayrshire
0 – 99	102	100	100	101
100 – 199	95	95	95	94
200 – 305	94	94	95	91
306 and +	92	93	94	90

Persistency

Expressed as a percentage, persistency indicates the change in milk yield between a given test day and the previous test day. It tells you if milk production – of an individual cow or the whole herd – is following a normal lactation curve. Persistency is often linked to health, nutrition, herd management, and even environment. Table 1 presents benchmarks for the different breeds. How does persistency in your herd compare?

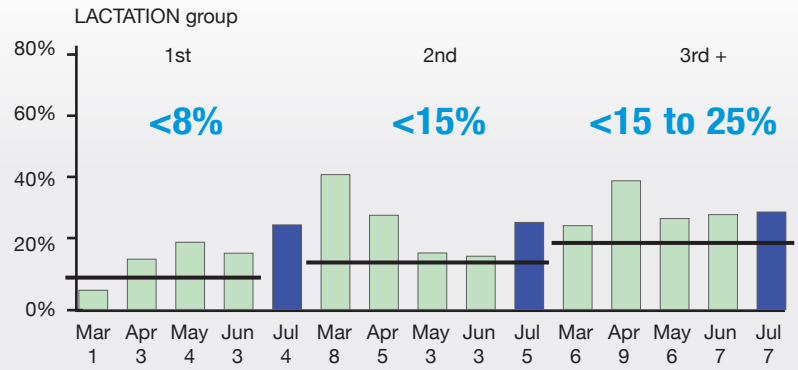
Average number of days in milk (DIM)

Ideally, average DIM should be between 150 and 180. It is often used as an indicator of reproductive efficiency, as it can be influenced by a number of parameters: calving distribution, heat detection, conception rate, and even calving interval. Table 2 presents the average daily gain in milk for every decrease of 10 DIM by breed.

TABLE 2. EXPECTED DAILY GAIN IN MILK PER 10-DIM DECREASE

Breed	Expected daily gain in milk (kg) per 10 DIM decrease
Ayrshire	+0.9
Holstein	+0.8
Jersey	+0.4
Brown Swiss	+0.6

FIGURE 2. PERCENTAGE OF COWS WITH A SCC OVER 200 000 BY LACTATION



Current average and rolling average

Both the current average and the rolling average are reported in the Performance Record - Herd Summary.

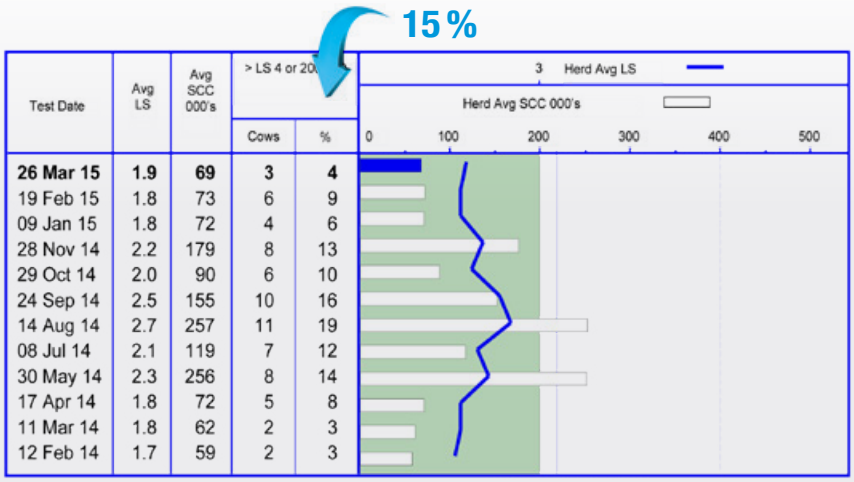
The current average (A) shows the projected milk yield for lactations in progress, while the rolling average (B) represents the average yield of all lactations completed in the past year. In this example, all indications are that herd production is progressing well.

A comparison of production between parity groups is another useful indicator. Considering all the herds enrolled on milk recording, second-lactation cows produce 15 per cent more than first-lactation cows, and cows in their third lactation and greater produce 6 per cent more than those in their second lactation. In the example above, there is a 21 per cent increase in yield between first and second lactation (C) and a 6 per cent increase between second lactation and third and greater (D).

PERFORMANCE RECORD - HERD SUMMARY

DESCRIPTION		PROFILE/LACTATION						
		Test Day				12 Months		
Lactation #		1st	2nd	3rd +	Herd	Herd		
					C = 21%	D = 6%	A	B
Quantity kg	M	8456	10753	11465	10070	9528	9459	10974
	F	365	460	474	427	384	370	427
	P	281	353	360	327	302	302	349
					TARGETS: 15%	6%		

FIGURE 1. SCC REPORT – HERD SUMMARY



AGE AT FIRST CALVING

The target age for first calving is 24 months. Minimum weight targets for first-calf heifers have recently been established at 600 kg for Holsteins and Brown Swiss, 500 kg for Ayrshires, and 400 kg for Jerseys. Thanks to high-performance herd management and enhanced genetics, many farms are now aiming for an average age under 24 months.

UDDER HEALTH

For a quick assessment of udder health in a herd, the SCC Report - Herd Summary is a priority. The objective is to have less than 15 per cent of cows with a SCC over 200,000 (Figure 1).

This information is also provided for each parity group, and the targets vary from one lactation to the next, as shown in Figure 2.

The next time your dairy production technician visits, take a few extra minutes to establish a plan concerning your milk recording data. Adjusting your targets could be more profitable than you think!

By JEFF GUNN, Atlantic Regional Manager, Valacta

Jolly Farmer Products, Joy and Josiah Weir, Northampton, New Brunswick

Top Herd Performance Index in New Brunswick

Laura Randall and Josiah Weir of Jolly Farmer Products in Northampton, NB

Q1 TELL ME A BIT ABOUT YOUR FARM/HERD. HISTORY, EVOLUTION OF OPERATION, ETC.

Josiah: "My Mom and I originally milked sixteen Ayrshires. We decided to move toward a breed with better components more conducive to cheese-making, so we started to make the switch to Brown Swiss in 2012. We started milking five cows and moved to eleven the following year. We kept expanding from there and today, Laura Randall, my fiancée, and I, are milking thirty cows. We feed a one group TMR and have been milking in a double-four herringbone parlour. We are currently installing one De Laval robot and will make the transition within a month. We farm 200 acres, which includes grass, alfalfa, and corn. We purchase bulk grain (corn and barley) and make the premix on the farm, using a recipe provided by Bellisle Feeds."

Q2 WHAT ARE THE PRIMARY GOALS FOR YOUR FARM? AREAS OF FOCUS?

Josiah: "Our main goals are to promote the Brown Swiss breed, and to produce the best forages possible. We believe high quality forages go a long way in maximizing production and animal health. We focus on our transition dry cow program and work closely with Jeff Walton. Our breeding program involves using bulls that are positive for milk and components, with decent confirmation (specifically udder and rump width). Reproduction is an area we focus on as well. The Brown Swiss breed has been wrongly accused of poor repro. Our average age at first calving is 23.5 months. Longevity of our cows is also something we are proud of, 52% of our herd is 3+ lactations. They have strong feet/legs and the move to a pack 2 years ago really improved SCC."

> "We need to continue to promote the industry and the **blue cow**."
> - Josiah Weir

Q3 WHAT FACTORS/ MANAGEMENT PRACTICES DO YOU ATTRIBUTE TO BEING A TOP-PRODUCING/PERFORMING HERD?

Josiah: "We spend a lot of time looking at sire proofs. We hand pick bulls and match them to the right cows. Bellisle Feeds provides us with a lot of expertise, not only in animal nutrition, but in crop management and nutrition. We use the data and our records to manage transitions. Transition Cow Index® is an important number for us. We also monitor our metabolic diseases and health using the Valacta reports. Somatic cell counts/milk quality is also something we focus on a great deal. As far as our forages, we always strive to harvest at the optimum stage and test all forages and corn silage. We also pay close attention to our fertilizer recommendations and application. We push up feed to the cows more often now and we know our cows very well. The last thing is that we work hard. To be successful, you constantly have to work at improving. We believe this is very important."

Q4 WHAT DO YOU FEEL ARE YOUR GREATEST CHALLENGES?

Josiah: "Efficiency...we are constantly striving to be more efficient. Sure the milk price has increased, but what does the future hold? We need to make more for less. For example, making quality silage can have a significant impact on concentrate costs. We need to look at labour efficiency as well. We need to continue to promote the industry and the blue cow."

Q5 WHY ARE YOU A VALACTA CUSTOMER? WHAT DO YOU NEED AND EXPECT FROM VALACTA TO HELP YOU MEET THESE CHALLENGES AND ENSURE THE FUTURE SUCCESS OF YOUR OPERATION?

Josiah: "We believe the new partnership with Canwest DHI and CDN is important. The Valacta workshops are very good. Data accuracy is the key to what we expect from Valacta, along with the advisory service."

By EVELYNE BOULIANNE, Dairy Production Advisor, and DÉBORA SANTSCHI, Ph.D., Agr., Dairy Production Expert, Nutrition and Management, R&D, Valacta

A Tool for the Near Future: the Milk Fatty Acid Profile

Milk fatty acid profile adds precision to total fat, and reveals a great deal about what is really going on in a cow. In the near future, it will be possible to monitor the fatty acid profile in both the bulk tank and in individual cow milk. But what does this new information bring, and how will it be used?

WHERE DO MILK FATTY ACIDS COME FROM?

While milk fat comprises more than 400 fatty acids, the 12 main ones originate from three different sources (Figure 1).

1 *DE NOVO* FATTY ACIDS: These are short-chain fatty acids (less than 16 carbons) and they represent 18 to 30% of the fatty acids found in milk fat. *De novo* synthesis takes place in the mammary gland, where fatty acids are produced from acetate and butyrate, that result from ruminal fermentation.

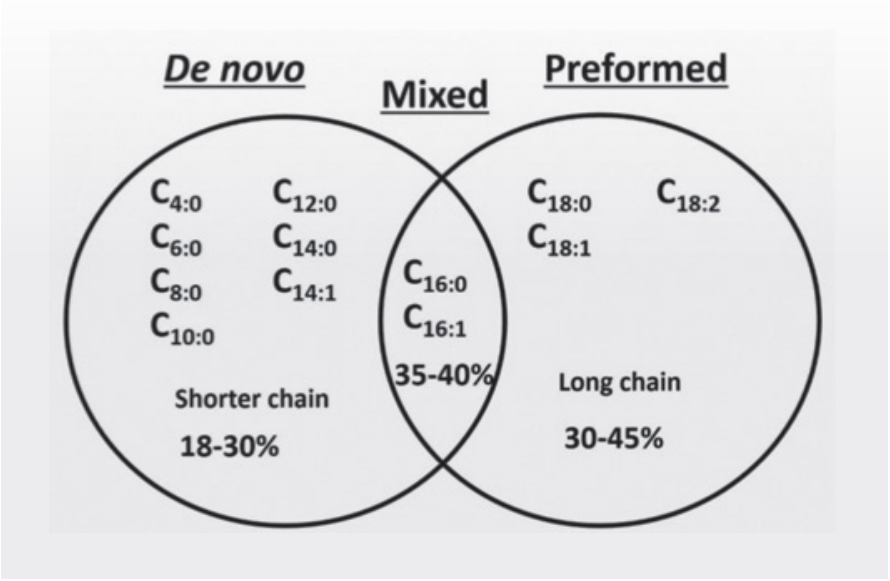
2 PREFORMED FATTY ACIDS: These fatty acids come from feed, are synthesized by microorganisms in the rumen, or result from the mobilization of the cow's body fat reserves (particularly important in early lactation). Preformed fatty acids make up 30 to 45% of milk fat.

3 THE MIXED FATTY ACIDS: They represent 35 to 40 % of the fatty acids contained in milk fat. These include fatty acids of 16 carbons, of which approximately half are from *de novo* origin, and the other half are preformed. Mixed and preformed fatty acids derived from feed transit through the digestive tract, are released in the bloodstream and then absorbed by the mammary gland, before being secreted into milk.

HOW ARE FATTY ACIDS ANALYZED?

The traditional method for analyzing the fatty acids contained in milk is gas chromatography. This type of analysis costs $150 per sample and takes about 4 h. At

FIGURE 1: FATTY ACIDS BY ORIGIN



Valacta, the fatty acid content can now be analyzed by infrared spectroscopy, at the same time as the standard milk components (fat, protein, lactose...). This testing method is faster (6 s per sample, or up to 600 samples per hour), and costs less than the gas chromatography analyses conducted in research stations.

WHAT ARE THE FACTORS THAT INFLUENCE THE FATTY ACID CONTENT OF MILK?

One of the major challenges of using the milk fatty acid profile is the need to consider all of the factors that cause it to vary. Among those that have been shown to have the greatest impact on the profile are genetics, breed, stage of lactation, ambient temperature, rumen conditions (pH), amount of concentrates fed, metabolic status, feeding management, and cow comfort.

HOW CAN THIS DATA BE USED?

Analysis of the fatty acid profile of milk will provide a more precise interpretation than fat alone. For example, in the case of a herd with slightly low fat levels, a profile analysis will show if the problem is due to a low concentration of *de novo* fatty acids (pointing to a lack of precursors, fibre that is less digestible than indicated on paper, low rumen pH) or to a low proportion of preformed fatty acids (indicating lean cows that have depleted their body fat reserves). Another example: an undetected change in forage could lead to a slight weight loss in cows if it were less digestible. If the fatty acid profile was monitored in the bulk tank every other day, an increase in preformed fatty acids could serve as a warning for the producer and the nutritionist, and it would be noticeable before the fat test begins to drop.

> One of the major challenges of using the milk fatty acid profile is the need to consider **all of the factors** that cause it to vary.

The analysis of milk fatty acid profile could also be used to more precisely assess the effectiveness and profitability of changes in feeding strategy or the addition of some specific additives.

Finally, more on an individual cow basis, it will likely be possible to establish a link between the milk fatty acid profile and ruminal pH, and then use a milk sample to find out what is going on in the rumen in order to maximise performances.

CONFIRMED PRACTICAL APPLICATIONS

The few studies that have been conducted to date on the fatty acid profile of commercial herds have yielded extremely interesting findings. A recent study conducted in the United States (Woolpert et al., 2017) showed that dairy herds with a high level of *de novo* fatty acids also had higher milk component levels than herds that had a low level of *de novo* fatty acids. Moreover, the study demonstrated that cow comfort and feed management have a significant impact on the milk fatty acid profile. In fact, herds with high levels of *de novo* fatty acids were 10 times more likely to have access to adequate feed bunk space (>18 in./head), and 5 times more likely to have a stall occupancy rate below 110%. Likewise, the managers of these herds feed the ration at least twice per day, effective fibre content of the total ration was higher (≥ 21% ADF), while total fat level was lower (≤ 3.5%).

THE PASSION TO DO MORE... TO IMPROVE THE HEALTH AND PERFORMANCE OF OUR COWS

Once benchmarks have been established Quebec farms, the fatty acid profile will make it possible to assess and improve feeding and herd management strategies to maximize cow health and milk production. The fatty acid profile is an additional tool that will enable producers and advisors to do more – because milk is our passion!

INTERVIEW

By JEFF GUNN, Atlantic Regional Manager, Valacta

Jewell Dale Farm, Logan Jewell, Meadowbank, Prince Edward Island

Top Herd Performance Index in Prince Edward Island

Q1 TELL ME A BIT ABOUT YOUR FARM/HERD. HISTORY, EVOLUTION OF OPERATION, ETC.

Logan: "My grandparents, Roy and Elaine, purchased the farm in 1957. My grandfather started with a cow-calf operation, while working off the farm at Canada Packers. Roy and my father Kevin started shipping cream in 1973, later moving to milk. They started registering cows around the same time. The farm at this time was a mixed farm with 20-30 cows, eventually expanding to 40 cows. The most significant change was in 2009 when we built a barn. We knew we needed to expand, as the farm was not big enough to support everyone. We built a 106-stall tarp barn with a double-eight parabone parlor. Today, we are milking 110 cows, with approximately 260 animals in total, including heifers and dry cows. Current production is 39-40 liters per cow per day (11,700 kgs per cow per year) with 4.3% fat and 3.2% protein. We farm 915 acres (315 owned, 600 rented) which includes pasture and land for producing forages and corn silage. We also grow corn, soybean, winter wheat and barley as cash crops. We do custom combining as well. Kyle, my brother, is our crop guy, managing crops, forages, custom work and young stock. His wife Jane manages calves, youngstock, feeding of dry cows and assists with milking and herd health. Mom (Cheryl) and Dad are very involved as well, with both looking after the bookkeeping. Dad carries out a lot of the maintenance on the farm. My younger brother Joel works off-farm at Green Diamond as a mechanic, but brings his skills back to the farm when not at work. My wife Megan helps with herd health and some milking. We also have two part-time employees year-round. Everyone plays an important role on the farm and are clear on their roles."

Logan and Kevin Jewell of Jewell Dale Farm in Meadowbank, PE.

Q2 WHAT ARE THE PRIMARY GOALS FOR YOUR FARM? AREAS OF FOCUS?

Logan: "Efficiency is the big thing for us. We have a large debt load that comes with a large investment, which we have made to be viable in the future. We focus on production per cow, while watching our expenses. We work to keep our feed costs low, by keeping it simple and focusing on forage quality. Reproduction is another management area we focus on. We work on repro closely with our veterinarian, Shawn MacKenna and AVC, as well as animal health. This helps to keep cow numbers down. Milk quality is another key goal for us. With the quality milk program on PEI, we want to maximize the return we receive in incentives for our product. Finally, our transition program is an important area of focus. We added a piece onto the barn last spring with a large pack for two groups of dry cows and a larger pack for fresh cows and special needs.

Q3 WHAT FACTORS/ MANAGEMENT PRACTICES DO YOU ATTRIBUTE TO BEING A TOP-PRODUCING/PERFORMING HERD?

Logan: "We surround ourselves with advisors and expertise. Shawn, Jeff Walton (Bellisle Nutrition), and Stirling Dorrance (Valacta Advisor) work as a team. We also use genomics to breed for health and production, and monitor things like Transition Cow Index® and repro performance parameters. Attention to detail is key to everything we do. We believe by focusing on areas like forage quality, calf and heifer management, cow comfort, reproductive efficiency, and transition, this leads to healthier, longer-living cows. As examples, we have been using more bedding for the past two years to increase lying time, we installed fans to reduce heat stress, and we installed headlocks to increase labor efficiency.

Q4 WHAT DO YOU FEEL ARE YOUR GREATEST CHALLENGES?

Logan: "Future viability and economics of the business. Our goal is to sustain the farm at its current size. Labor efficiency, margins and overall profitability must be considerations.

Q5 WHY ARE YOU A VALACTA CUSTOMER? WHAT DO YOU NEED AND EXPECT FROM VALACTA TO HELP YOU MEET THESE CHALLENGES AND ENSURE THE FUTURE SUCCESS OF YOUR OPERATION?

Logan: "The Valacta reports are an important management tool that not only provide benchmarking, but valuable information on which cows are most profitable. The Profitability Report is powerful as it is an indicator of the cost of heifer raising. It is important to tie economics to these performance numbers. We also like the milk value number. A certain cow may not be the top milk producer, but given current component prices, she may be the one bringing in the most revenue. This is the kind of information that is key to our operation."

By STEVE ADAM, Agr., Animal Comfort, Behaviour and Well-Being, R&D, Valacta

Handling Animals Safely and Without Stress

Since the domestication of the cow, farmers have had to handle their animals on a regular basis. Over the course of one lactation, a producer can handle his cows 10 to 15 times during the lactation and this is without counting the handling for milking. Therefore moving animals is virtually a daily activity.

The Code of Practice states that: Workers who handle cattle have to be familiar with their behaviour and with gentle handling techniques, either due to training, experience or apprenticeship. It is also a requirement of proAction®.

The purpose of this requirement is, of course, to reduce stress on animals, but it also reduces the risk of injury to animals and farmers while improving work efficiency.

To properly match our handling of the animal with its behaviour, it is important to properly understand how it communicates and reacts with its environment.

HANDLING 101

Every animal has an invisible zone around it, which is called a flight zone. When we enter this zone (A), the animal will want to protect this distance between him and his "predator" by moving away. Outside of the flight zone there is the pressure zone (B) in which a handler can position himself to initiate movement of an animal without scaring it away. When movement is initiated, pressure must be immediately released to reward the animal. That way the learning process will go smoothly. The tamer the animal is, the smaller the circumference of this zone.

The handler must position himself on the side of the animal, making sure to clearly see the eye of the animal. He has to make sure he gets the animal's attention. This can be detected by observing the movement of the ears. Without looking at us, a cow pointing her ear towards us is often a sign that we have captured the animal's attention.

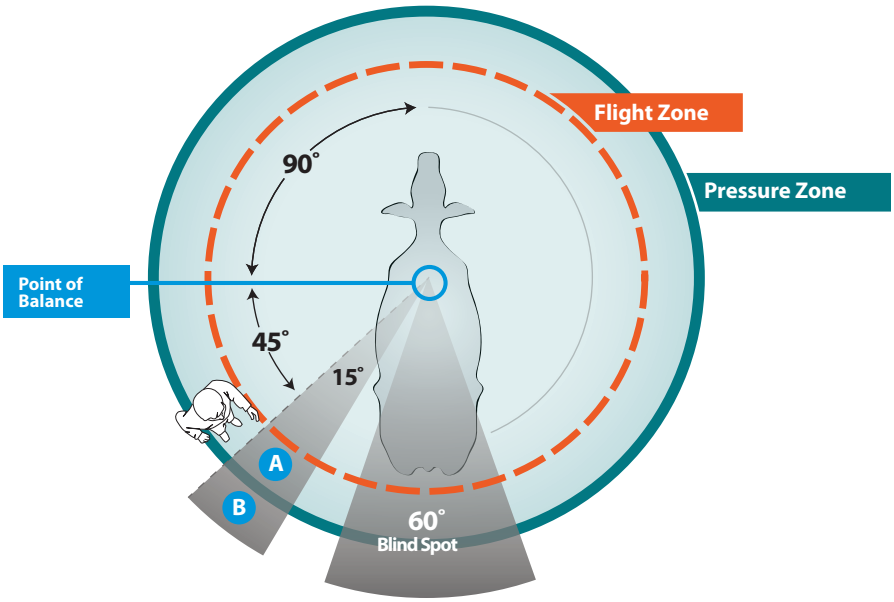
It must be recognized that the cow has difficulty judging the distance of its handler due to her monocular side vision.

She has about a 60-degree angle blind spot behind her. Do not position yourself directly behind an animal to make it move forward because it will tend to turn its head to try to see us and this will also affect its trajectory.

When we walk faster than the animal, it tends to slow down and stop the moment we go past its shoulder (point of balance). Using this technique, we can control the speed and even make the animal stop solely with the position of our body. Walking in the opposite direction of animals will tend to make them speed up.

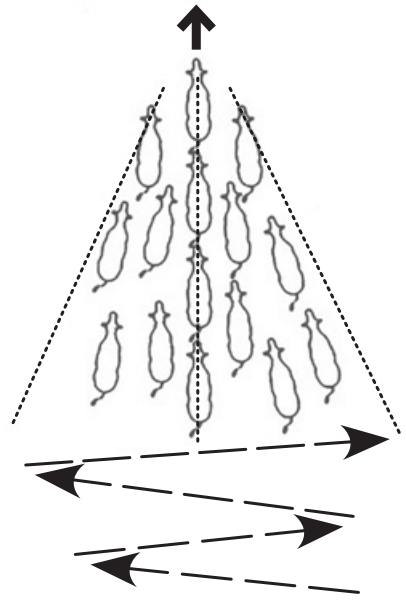
GETTING AN ANIMAL OUT OF A STALL

Using the point of balance technique to get the animal out of its stall is very effective. Simply enter a stall next to the cow, advance to go past the point of balance (the shoulder) while putting pressure towards the flight zone. That way the animal will rise and calmly walk out of the stall.



THE ZIGZAG TECHNIQUE

The zigzag technique is used to bring a group of animals from point A to point B. This is useful both in the barn and outdoors. The idea is to start moving from left to right to gather the group of animals. Once the movement of the group is initiated and the animals are aligned in the direction we want to move them, just make a path of straight lines from left to right. Circulating from left to right allows us to capture the attention of all of the animals. Regardless of the number of animals in the group, this is an applicable technique.



Grandin, 2014 (https://www.grandin.com/behaviour/principles/eight.steps.grazing.without.fences.html)

Animal handling is mainly a matter of positioning. We must remember that a way to do things quickly is to take your time and **not force animals to rush their movements**.

CONCLUSION

Animal handling is mainly a matter of positioning. Yelling is not necessary; it can all be done with both hands in your pockets. We must remember that a way to do things quickly is to take your time and not force animals to rush their movements. The more we use these techniques on young animals, the easier it will be once they become adults.

By STEVEN SIEVERT, Technical Director, National DHIA; Chair, ICAR Recording and Sampling Devices Subcommittee; Chair, ICAR Sensor Devices Task Force

ICAR Sensor Devices Task Force

ICAR and its members do not have a method to determine the 'fitness for use' of data originating from non-ICAR certified sensors or sensor systems.

THE CHALLENGE

Many of these sensors are currently being used by farmers and breeders to make management and breeding decisions. In addition to the use of this data for these on-farm decisions, these sensor devices/systems have a wealth of information that could flow directly to national cooperator databases and may be used for genetic predictions, research, and benchmarking. This information includes alternative measures of data already collected such as milk yield and composition but also includes observational data that does not readily flow through the DHI system such live body measurements, activity counts, and feed efficiency estimates.

ICAR members have asked ICAR to provide guidelines and the methodology to help classify and qualify such sensor data so as to determine their suitability for informed management decisions and inclusion in databases alongside traditional data collected by DHI organizations. This challenge involves both understanding what the measurement is in the sensor system but also recognizes the need for data credibility, accuracy and connectivity as it flows from the farm to centralized databases.

THE APPROACH

The Sensor Devices Task Force (SD-TF) was assembled in 2016 to meet this challenge and includes representatives from Netherlands, Germany, Denmark, Ireland, Austria, France, Sweden, and the United States. The expertise brought to the task force comes from DHI/herd recording organizations, ICAR device test centres, sensor device manufacturers, Interbull/database managers, and milk analysis professionals – all working together to provide guidance to ICAR members.

After a survey of varied industry data suppliers and data users, the SD-TF

WHAT IS ICAR?

ICAR, (International Committee for Animal Recording) is an international non-governmental organization whose objectives are to promote the development and improvement of animal identification, performance recording and evaluation of livestock production. These objectives are achieved through the establishment of standards and guidelines for measuring characteristics of economic importance.

Facts about ICAR :

- 120 members on 5 continents;
- 560 ISO-certified identification instruments
- 58 certified lactometers;
- 21 specialized groups;
- 160 experts involved in the groups;
- A network of 45 certified milk and genetic laboratories

identified five key priority areas that data from sensor systems falls into. These include:

- Milk yield and flow measurements (yield, flow rate, milking speed)
- Milk composition estimates (both traditional components and new measures)
- Live body measurements (BCS, weight, conformation)
- Live activity measurements (motility, resting, walking, eating, drinking)
- Feed efficiency measurements (temperature, methane production, intake)

While these groups of sensor measures provide structure, meeting the challenge of development of guidelines for each measurement or trait would be a daunting task. Recognizing this, the SD-TF is focused on development of the guideline structure for a measurement, identifying the critical components that qualify the data from the sensor device/system. From there, the many working groups of ICAR with their specific expertise can use this structured guideline, providing additional information on the accuracy, repeatability and reproducibility standards for each trait as desired.

When the initial work of the SD-TF concludes, remaining projects will move to the ICAR Recording and Sampling Devices Subcommittee – the ICAR body responsible for testing and certification of both traditional devices and now sensor devices.

PLANNED DELIVERABLES OF THE ICAR SD-TF

The SD-TF is intended to conclude its work during the summer of 2019, but guidelines development will continue to ensure new technologies are embraced and to revisit current guidelines for relevance. To guide ICAR and its members with an understanding of data usability for various purposes – management decisions, research, benchmarking, and genetic evaluations, the SD-TF is poised to deliver the following key items.

In addition to the key deliverables of the ICAR SD-TF, additional guidance will be provided to ICAR members through the development of both guidelines and best practices for using data from sensor devices in general. Among the most critical components of this overview is the accuracy of animal identification in a sensor system, noting that while a device may be accurate in its measurement, the data are just numbers without correct animal identification associated with the measurement.

The SD-TF acknowledges the support of its many member organizations, providing both resources and talent to work collectively for the good of ICAR, its members, and the farmers and breeders served by them.

Methodology to classify SD and quantify or assess data usability from these devices.	• Resource page on the ICAR website for SD that includes links to external work related to SD summaries and resources. • Publish summary table of devices with trait measurement capabilities and measuring principles. • Complete reference table of trait characterization and validation criteria, including the 'gold standard' or 'reference measurement' where applicable
Develop guidelines for determining data usability	• Development of standard guideline structure by trait or measurement. • Guideline development in five key priority areas. • Presentation of draft guidelines for milking speed and body condition at ICAR 2019 meeting and first stages of guidelines in other key areas including milk quality and mastitis
Develop procedures and guidelines for certification or validation of SD	• Determine innovative approaches to testing or evaluation of SD by ICAR test centres. • Engage SD manufacturers for feedback in summar table review and proposed SD testing protocols. • Develop protocols for routine calibration or annual monitoring of SD for ongoing data credibility.

By JEFF GUNN, Atlantic Regional Manager, Valacta

Sunrise Dairy Ltd., Olive and Jeff Greening, Musgravetown, Newfoundland

Top Herd Performance Index in Newfoundland

Olive and Jeff Greening from Sunrise Dairy Ltd., NL

Q1 TELL ME A BIT ABOUT YOUR FARM/HERD. HISTORY, EVOLUTION OF OPERATION, ETC.

Olive and Jeff: "In 1994, we purchased our first quota and started milking 60 cows in a tie-stall operation. In 1999, we purchased our (Jeff's) father's quota and herd, moving to a larger tie-stall barn housing 86 stalls and keeping the prefix JeffreyDale. We raised some heifers and purchased the remaining we needed. In 2005, we built a free-stall facility and purchased more quota and cows, all the while focusing on genetics and nutrition. As soon as genomics became available, we started testing all heifers born on the farm, even though the industry was still unsure and still learning about genomics. We felt it could help wean out the less productive animals at an early age, helping with heifer raising cost. It also helped us build a better breeding program, focusing on longevity and profitability. We transferred our prefix to our children's names JessieJoe and worked with HC to register the entire herd. In 2008, we built an extension on to the free-stall barn, making room for a larger milking herd and designating a special needs area for our far-off and close-up dry cows. This expansion brought the herd to 200 head. We continued to raise heifers and built a calf barn and later a heifer barn to house them all. Living on an island like Newfoundland, we had constraints on purchasing good quality cows so there was a lot emphasis put on raising top notch heifers which, in turn, would help us have a better milking herd for the future."

Q2 WHAT ARE THE PRIMARY GOALS FOR YOUR FARM? AREAS OF FOCUS?

Olive and Jeff: "Our ongoing goal is to be the most profitable family farm possible, while balancing the herd's success with that of our loyal family and employees. We also focus on perfecting the dry cow management program, which we believe leads to a trouble-free and profitable lactation. Keeping the milk herd comfortable, healthy, and contented is very important and will ultimately improve and optimize our herd performance. Another key goal for us is optimizing forage quality and quantity by continuing to clear land each year, while realizing that buying excellent quality forage for the milk herd is also a must, if you can't produce it".

Q3 WHAT FACTORS/ MANAGEMENT PRACTICES DO YOU ATTRIBUTE TO BEING A TOP-PRODUCING/PERFORMING HERD?

Olive and Jeff: "We never stop learning and stay persistent at all times. We are constantly adopting new technologies, but never forget that the cows still need the attention and the hands-on approach of the farmer. We surround ourselves with knowledgeable, successful companies and people to aid in our own success. We believe that today's decisions are tomorrow's results, always planning and always improving whenever possible. We always treat decision-making in a professional way because farming is a business. Finally, we treat employees well, never asking them to do anything that we would not do ourselves."

Q4 WHAT DO YOU FEEL ARE YOUR GREATEST CHALLENGES?

Olive and Jeff: "Finding dedicated, qualified employees. Also, our location - living on an island can be challenging and expensive at times. Whenever there is an equipment issue or breakdown, it can mean days before parts arrive."

Q5 WHY ARE YOU A VALACTA CUSTOMER? WHAT DO YOU NEED AND EXPECT FROM VALACTA TO HELP YOU MEET THESE CHALLENGES AND ENSURE THE FUTURE SUCCESS OF YOUR OPERATION?

Olive and Jeff: "It seemed to be the next logical step. We made improvements in all the areas we felt we could, but the next step was that we needed more information. Years of collecting individual samples and entering them manually just for SCC was very time consuming with little information obtained. We knew we had areas of weakness and we felt Valacta could help us with that... udder health, transition, maintain milk records. Having a non-biased, practical opinion from Stirling (our Valacta Advisor) whenever we need it, is beneficial. We need Valacta to continue to help us improve. We also like to see Valacta visiting more often in NL with workshops, when the opportunity arises. We can see Valacta being helpful to the NL industry, if it could be around more."

"Our ongoing goal is to be **the most profitable family farm possible**, while balancing the herd's success with that of our loyal family and employees."

- Olive and Jeff Greening

By MARIO SÉGUIN, Agr., Dairy Production Expert – Milk Recording and Data Management, R&D, Valacta.

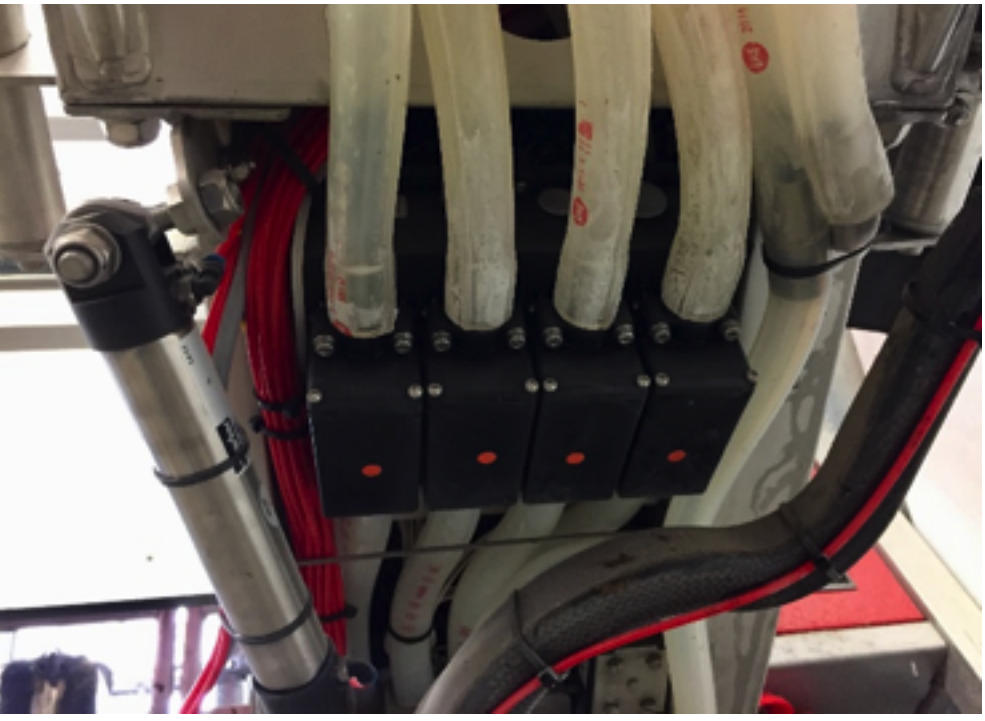
The Passion to do More by Valuing Milking Robot Data

Given the growing number of dairy farms equipped with automated milking systems (AMS), Valacta is working to better understand and value the data generated by the software and sensors found in these systems.

The primary goal of this research is to support producers in making the best possible use of AMS technology. The work also focuses on developing automated processes that will ultimately collect farm data through cloud computing. Acquiring and processing such data will make it possible to establish national benchmarks to support producers in managing their robot herds.

Some brands of milking robots provide indicators on milk component values as well as somatic cell counts (SCC). To put such information to good use, however, we need to better understand the data and be able to benchmark it against data from certified laboratories. To that end, Valacta has conducted a study aimed at characterizing the milk component data generated by robotic milkers (see textbox).

After collecting milk samples, daily values of fat and protein levels and SCCs generated by the robots were retrieved from the AMS software. The samples were also tested in the laboratory to compare the results with the values obtained from the milking robots.



Sensor calibration is key to obtain accurate component readings.

DO FAT AND PROTEIN VALUES FROM ROBOTIC MILKERS DIFFER FROM THE LABORATORY ANALYSES?

Average daily herd results show little difference between the robot data and the laboratory results. Researchers conducted different analyses to quantify the variance for each cow. One of these analyses established correlations between robot values and laboratory values. With a correlation of +0.37 for fat and +0.38 for protein, the results confirm that values provided by the robotic systems serve as performance indicators, as specified by the manufacturer.

DOES CALIBRATION AFFECT THE ACCURACY OF THE MEASUREMENTS?

The analysis of the correlations for each of the ten herds showed variable results. One possible explanation for the variation is the calibration of the milking robots. Calibration is a key factor in the precision of measuring instruments. The most commonly used calibration method for robot sensors is based on bulk tank levels. Producers themselves must input the levels for each milk shipment into their software. One hypothesis is that calibration frequency may affect the accuracy of the component readings by the robotic milker.

VALUATION OF MILK COMPONENT DATA GENERATED BY ROBOTIC MILKING SYSTEMS

PROJECT OVERVIEW:

- 14 dairy farms
- 2 milking robots per farm (in most cases)
- Milk samples were taken from all milkings over a 24-hour period in 10 herds with milking robots equipped with sensors for milk, protein and lactose levels. A total of 2970 samples were collected from 797 cows. Five of the farms used a CMT milk analyzer to measure SCC.
- For the four farms using an optical somatic cell counter, milk samples from the first milking were taken over a 12-hour period from a total of 216 cows.
- The samples were analyzed in the Valacta laboratory for milk component levels and SCC.
- Financial support was provided through the "Growing Forward 2" Sector Development Program, a joint initiative of the MAPAQ and Agriculture and Agri-Food Canada.

WHAT ABOUT SCC?

The technology used to generate SCC values differs among systems. One aims to identify cows suffering from clinical mastitis, as does an on-farm CMT (California Mastitis Test). The other system uses an optical somatic cell counter, a technology similar to what is found in certified laboratories. For SCCs under 500 000, the optical counter provides values that are comparable to laboratory results. This is not the case with the CMT technology, however, as it tends to underestimate herd SCC. These results show that it is important to have a clear understanding of the differences between the on-farm automatic milking systems, particularly if the data is to be used for genetic evaluations.

CAN WE DO MORE WITH THE DATA FROM AUTOMATIC MILKING SYSTEMS?

This study confirms that milk component levels currently provided by robotic systems can be used to help producers better manage their herds. The results also suggest that it is important to have a good understanding of the technology behind each different system to monitor their calibration and accuracy. Further research will be important to better understand sensor calibration procedures and to assess the effects of calibration. The Canadian dairy industry will then need to use this knowledge to establish data validation mechanisms based on their intended use, making a distinction between data for herd management purposes and data for genetic evaluations.

A Web Portal to Fulfill our Mission

In mid-April, we have launched our new web portal. The new environment that we have built was designed with you in mind. You and your desire to get information on subjects that are directly related to your needs of business farm leaders.

UTILITY MENU

On the home page, Internet users can find information about our company, consult the career section or search the utility menu at the top right. It is also in this menu that you can access your personal Valacta "MySite" to review your milk recording reports. We have put it at the same place as before so you don't have to look for it!

MAIN MENU AT THE FARM

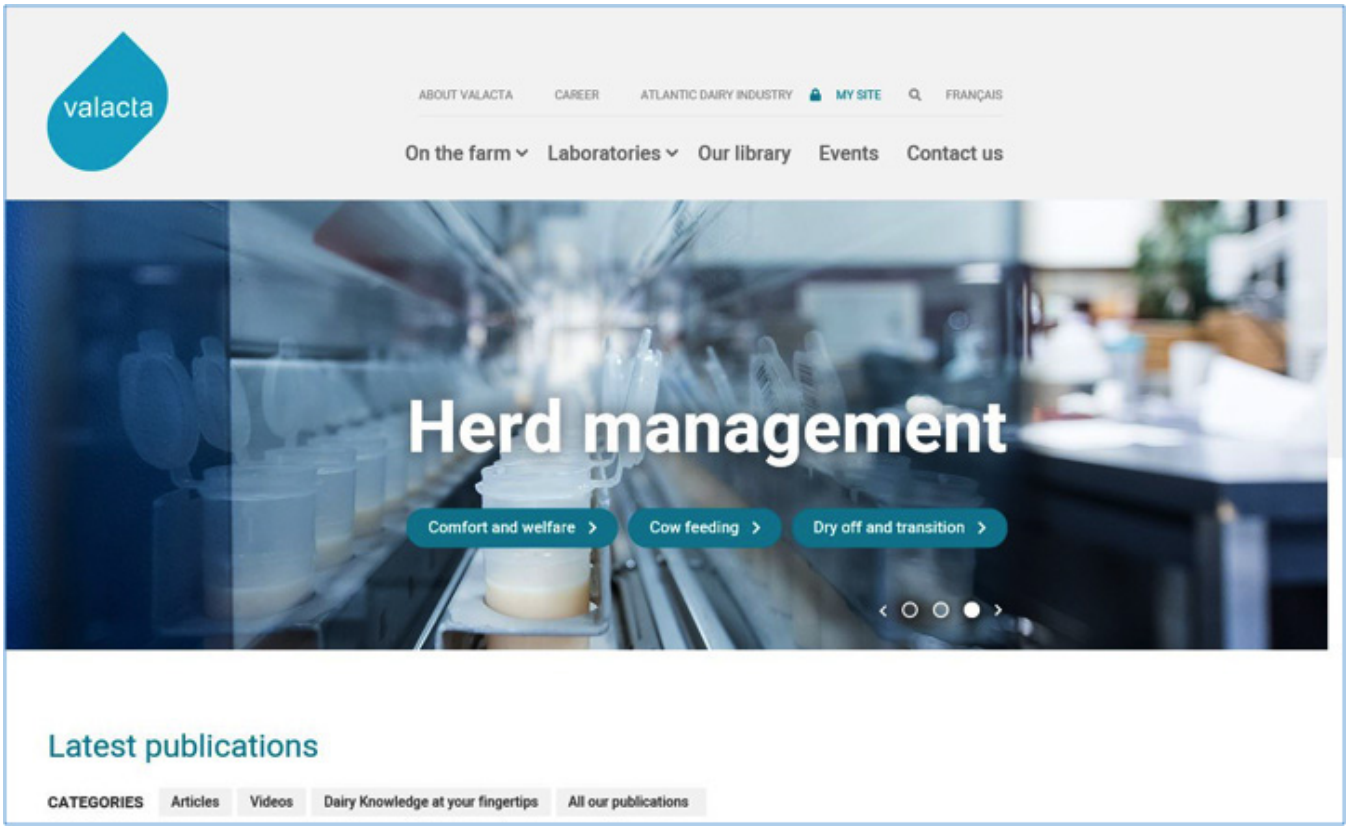
Under the utility menu is the main menu through which you can access all pages related to our farm services or our laboratory services. The on-farm tab leads to several thematic pages that correspond to all our expertise... For example, you can find information or publications related to milk recording, themes related to herd management such as feeding, comfort and well-being, technico-economic management, robotic milking, etc.

LABORATORY

For the laboratory tab, the information is clearly indicated according to the type of clientele, i.e. whether it is for producers or for processors and dairy laboratories.

Have you ever watched our videos? They can all be found on our site in the library section by choosing Video in the section Type of publication.

If you have not visited our portal yet, we invite you to take a peak: **www.valacta.com**



By GERVAIS BISSON, Agr., Dairy Production Expert – Robotic Milking and Strategic Advisor, Valacta

Quantifying Efficiency in Automatic Milking Systems: Because Time is Money!

Automatic milking systems (AMS) provide a great deal of data, but it can be difficult to determine the production potential of each farm. With milking parlours and milk lines, the number of cows and the average yield per cow are variables used to estimate production. With AMS, the time factor must also be considered. And since we can't add minutes to days, the yield per milking robot is limited.

MILKING ROBOTS HAVE FREE TIME

We generally consider that a robotic milker is at full capacity when it is vacant less than 10 per cent of the time. Time lost when cleaning the robot, when cows refuse to be milked and other time-loss factors normally represent about 8 per cent of the available time. So the daily potential milking time of a robot is actually around 82 per cent of 24 hours, equivalent to 19.68 hours or 1181 minutes. Most robotic milking systems track milkability, which is expressed as the milk yield per minute spent in the milking robot (box time), and this trait is an important indicator of AMS efficiency. Every minute in the robot must be productive!

A MATTER OF GENETIC POTENTIAL?

A group of researchers in Norway collected data from 46 herds over a two-year period, recording milk yield per minute box time. Based on that data, average heritability for milkability was estimated to be 0.29 for the entire lactation, and the average for days 30-60 in milk was almost identical, at 0.30 (B. Heringstad et al., 2014). The heritability of this trait is thus significant, and should be taken into account when selecting cows.

UNRELATED TO MILK PRODUCTION

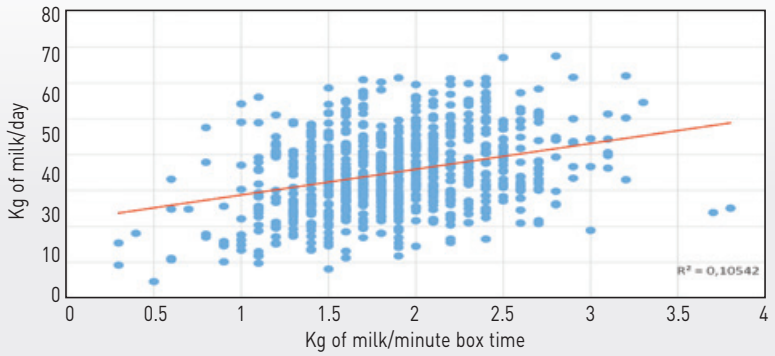
How does milkability vary among cows in a given herd? The variation is somewhat random, and, surprisingly, not related to the milk production of each cow.

Figure 1 shows that the correlation (R2) between milk production and kg of milk per minute box time is very low. Milk flow among the cows producing over 50 kg of milk varies, with some producing 1 kg/min and others more than 3 kg/min. The issue with AMS is that a cow producing 50 kg of milk at a flow rate of 1 kg/min spends 50 minutes in the milking robot while other cows are able to produce the same yield 3 times faster.

WHAT IF THE LEAST EFFICIENT COWS WERE REPLACED?

To help identify the least efficient cows in a herd, my colleague Liliana Fadul-Pacheco initiated a study of 12 herds over a period of a several months to determine the value of this trait for AMS herds. She first calculated the value of the milk per minute box time, using milk component prices and component levels of each of the cows, and taking into account transportation, administration, development and promotional costs, to provide a realistic assessment of the value of each of the cows. Average milk value was $1.23 per

FIGURE 1: PRODUCTION PER COW PER DAY/KG OF MILK PER MINUTE BOX TIME*



** Data from 9 Holstein herds for a total of 784 cows, in late July 2018. Cows with 7 or fewer days in milk were excluded and the value of kg of milk per minute box time is based on a 7-day average.*

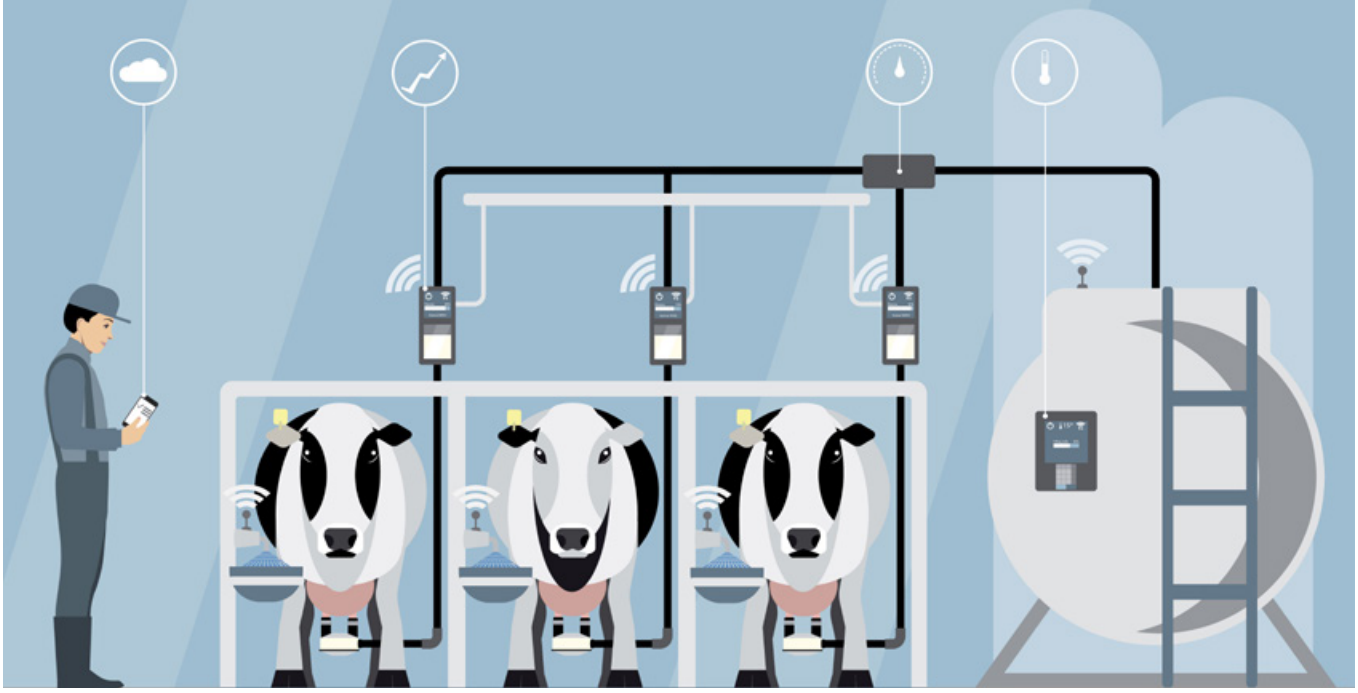


FIGURE 2: GAIN IN PRODUCTIVITY WHEN REPLACING THE LEAST EFFICIENT COWS WITH HERD AVERAGE COWS

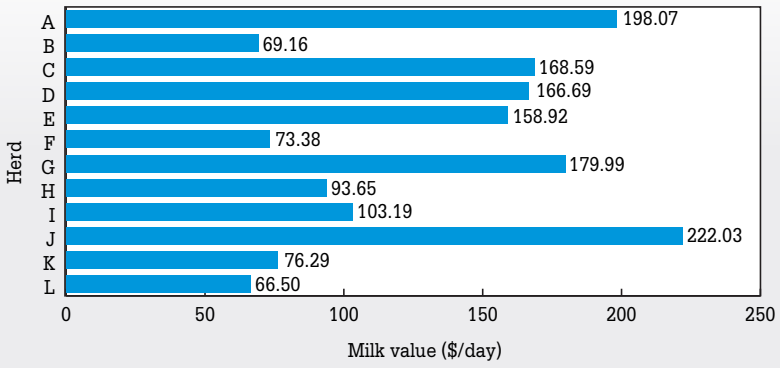
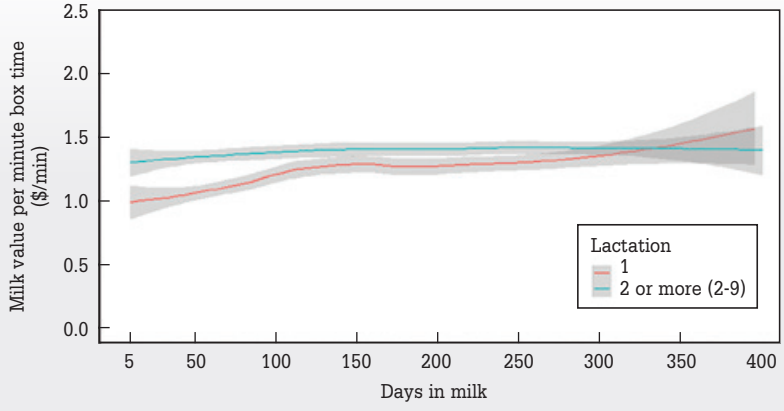


FIGURE 3: MILK VALUE PER MINUTE BOX TIME IN RELATION TO DAYS IN MILK



minute box time, but in-herd variation was considerable, ranging from $0.36 to $2.57.

The study also examined the financial impact of cow selection, by determining how productivity would be affected if the 10-per-cent least efficient cows were removed from the herd and replaced with cows that have the herd average milk value per minute box time. As shown in Figure 2, the financial impact of that change is highly significant.

Because most of these herds have one or two milking robots, the increase in milk value per minute box time is very advantageous from a financial perspective. The study also confirmed that milk value per minute box time remains relatively stable from the beginning to the end of lactation (Figure 3). While first-lactation cows usually have a lower milk value than mature cows, there is little difference when mature cows go from their second to their third lactation. This would also means that the least efficient cows are likely to remain so on their second or third lactations, and will inevitably have an impact on your productivity and profitability.

CONCLUSION

In addition to genetics, a number of management factors also influence milk yield or milk value per minute box time. Box time not only includes milking but also the time required for preparation and attaching the teat cups. Other issues such as cows that require a longer preparation phase, incomplete milkings, or cows that are occasionally in priority feeding mode can have a significant impact on efficiency and profitability.

Your Valacta advisor can help you assess your herd's current performance and offer you different options to improve the productivity and efficiency of your AMS. Because ultimately... time is money!

Benchmarks

MILKING ROBOTS – PREDOMINANT BREED HOLSTEIN – DECEMBER 31, 2018

	Atlantic		Quebec		Ontario		West		Canada	
	Robot	Total[1]	Robot	Total[1]	Robot	Total[1]	Robot	Total[1]	Robot	Total[1]
Number of herds	28	289	261	3,257	247	2,310	148	770	684	6,626
Number of cows per herd	119.4	107.4	103.4	73.5	114.3	92.0	160.1	178.7	120.3	93.6
Annual milk (kg/cow/year)	10,958	9,699	10,295	9,741	10,617	9,761	10,879	10419	10,565	9,825
Annual fat (kg/cow/year)	442	391	413	394	418	386	430	419	420	394
Annual fat (%)	3.99	4.03	4.02	4.05	3.94	3.96	3.95	4.02	3.97	4.01
Annual protein (kg/cow/year)	363	317	342	325	349	319	356	339	349	324
Annual protein (%)	3.27	3.27	3.33	3.33	3.29	3.27	3.28	3.26	3.30	3.30
305-day milk (kg)	11,057	9,897	10,300	9,860	10,718	9,997	11,088	10,639	10,652	10,000
305-day fat (kg)	439	394	405	393	418	392	428	419	416	396
305-day fat (%)	3.95	3.98	3.93	3.99	3.90	3.92	3.86	3.94	3.90	3.96
305-day protein (kg)	358	318	336	323	347	321	357	342	346	324
305-day protein (%)	3.23	3.21	3.26	3.27	3.24	3.21	3.22	3.21	3.24	3.24
Days at peak	47	44	46	44	49	46	59	55	50	46
Peak milk (kg)	44.6	39.3	41.6	39.6	43.2	39.5	43.5	41.8	42.7	39.8
Lactation persistency	96	97	97	97	98	98	99	98	97	97
Transition Cow Index®	463	141	332	179					344	176
Longevity (% 3rd lactation +)	38.6	39.8	38.8	41.7	35.7	36.5	34.1	34.7	36.7	39.0
Age at 1st calving (mo.)	25.1	26.6	25.1	25.6	24.9	25.6	25.7	25.6	25.1	25.6
Herd age at calving (mo.)	44.5	47.6	44.7	47.1	43.1	44.6	43.6	43.7	43.9	45.9
Herd turnover (%)	37.1	36.9	34.2	34.9	40.4	39.9	40.7	41.0	38.0	37.4
Mortality (%)	3.2	3.3	5.1	5.0	5.5	5.5	7.8	7.7	5.7	5.4
Disposal for feet/legs (%)	3.7	3.6	3.1	2.8	2.2	2.3	2.9	2.7	2.7	2.6
Disposal for reproduction (%)	6.3	7.3	5.3	6.2	6.8	7.5	6.2	6.8	6.1	6.8
Disposal for mastitis/high SCC (%)	5.6	5.3	3.8	4.6	2.9	3.9	4.2	4.2	3.7	4.3
Sold for milk production (%)	2.4	4.0	2.2	2.6	7.5	7.4	4.4	5.1	4.6	4.6
Calving interval (days)	414	425	406	416	409	422	424	424	412	419
Days to 1st breeding	84.0	87.0	74.5	76.6	82.8	85.4	92.5	90.8	81.8	81.7
Days dry	71.2	71.8	63.0	63.2	67.9	69.1	72.4	74.6	67.1	66.9
Annual SCC ('000/ml)	229	218	222	216	227	236	235	213	227	223
Milk value ($)	7,632	6,721	7,161	6,828	7,466	6,865	7,580	7,369	7,391	6,899
Herds with feed	1	37	50	801					51	838
Annual feed cost ($)		2,238	2,397	2,319					2,398	2,315
Margin over feed cost ($)		4,309	4,686	4,518					4,705	4,509
Feed cost ($/hl)		25.36	25.91	24.92					25.86	24.94

[1] Number of herds with a known milking system.

PROVINCIAL 305-DAY PRODUCTION AVERAGE

Province & Service Level	Herds	Milk (kg)	Fat (kg)	Protein (kg)	BCA M	BCA F	BCA P	Avg BCA
NEW BRUNSWICK								
Publishable	86	9,445	381	305	216	227	216	219.7
All	114	9,144	361	289	212	215	206	211.0
NOVA SCOTIA								
Publishable	98	9,907	397	323	223	236	226	228.4
All	124	9,770	391	318	220	231	223	224.7
PRINCE EDWARD ISLAND								
Publishable	75	10,003	405	323	224	242	227	231.0
All	95	9,842	399	318	219	238	222	226.3
NEWFOUNDLAND								
Publishable	6	10,628	442	340	238	267	239	248.0
All	7	10,114	412	323	225	247	226	232.6*

* For AY, HO and JE breeds a minimum of 10 publishable lactations is required for a publishable herd average - all other breeds require 5.

ANNUAL PROVINCIAL HERD DEMOGRAPHICS - ALL HERDS

Herd Size (Cows)	Herds	Animals	Average Herd Size	Average Milk Production	Average Fat Production		Average Protein Production		Average SCC
	(%)	(%)			(kg)	(%)	(kg)	(%)	('000/ml)
NEW BRUNSWICK									
1-39	9.3	2.6	31	6,718	283	4.18	227	3.37	317
40-79	42.6	24.6	62	8,901	340	3.85	277	3.12	209
80-119	24.1	22.6	101	8,927	368	4.14	297	3.34	220
120+	24.1	50.2	225	10,328	424	4.11	338	3.28	191
NOVA SCOTIA									
1-39	6.6	1.9	28	7,531	302	4.06	249	3.33	180
40-79	48.8	29.1	58	9,177	371	4.05	304	3.33	238
80-119	24.8	24.9	98	9,627	386	3.98	316	3.29	254
120+	19.8	44.1	217	10,901	446	4.10	357	3.28	189
PRINCE EDWARD ISLAND									
1-39	3.3	0.9	27	8,495	356	4.19	274	3.23	324
40-79	51.6	32.3	59	9,223	377	4.09	302	3.27	206
80-119	26.4	27.2	97	9,720	404	4.16	321	3.30	201
120+	18.7	39.6	199	10,871	443	4.09	355	3.27	186

QUEBEC HOLSTEIN HERD STATISTICS BASED ON MILK PRODUCTION[1] - FEED EFFICIENCY

Production (20% ranking)	0-20[2]	21-40	41-60	61-80	81-100	Total/ Ave
Number of herds	643	643	642	642	642	3,212
Number of cows in the herd	59.1	67.2	71.0	76.5	90.0	72.7
PRODUCTION						
Milk (kg/cow/year)	7,794	9,181	9,827	10,429	11,479	9,741
Butterfat (kg/cow/year)	319	373	397	420	461	394
Butterfat (%)	4.09	4.07	4.04	4.03	4.02	4.05
Protein (kg/cow/year)	261	307	327	348	381	325
Protein (%)	3.34	3.35	3.33	3.33	3.32	3.33
SCC ('000 c.s./ml)	259	223	209	198	190	216
Linear score	2.8	2.5	2.4	2.3	2.3	2.5
Corrected milk[3] (kg/cow/day)	29.1	33.5	35.4	37.3	40.9	35.2
DEMOGRAPHICS						
Culling (%)	34.1	34.7	34.6	35.0	36.4	35.0
Voluntary cull[4] (%)	4.1	5.0	5.2	5.7	7.6	5.5
Involuntary cull[4] (%)	19.0	20.0	21.4	20.9	20.9	20.4
Cows in lactation (%)	86.1	86.8	86.9	87.0	87.4	86.8
3rd lactation + (%)	42.1	41.7	42.0	41.7	40.9	41.7
Average age (yr-month)	4-1	3-11	3-10	3-10	3-9	3-11
Average bodyweight (kg)	661	677	681	688	700	683
Age at 1st calving (months)	27.2	25.9	25.3	25.1	24.6	25.6
Bodyweight at 1st calving (kg)	612	628	629	635	647	632
REPRODUCTION						
Calving interval (days)	434	417	411	408	407	416
Days in milk at 1st breeding	83	76	75	74	76	77
Breeding/cow/year	2.18	2.29	2.29	2.33	2.32	2.28
Days dry	67	64	63	63	61	63
Days open	154	137	131	128	127	136
Milk value ($/cow/year) (all herds)	5,596	6,480	6,869	7,259	7,965	6,833
FEED AND COSTS						
Number of herds with feed	**154**	**154**	**153**	**153**	**153**	**767**
Milk value ($/cow/year) (herds with feed)	5,720	6,436	6,854	7,263	7,847	6,822
Milk (kg/cow/year) (herds with feed)	8,090	9,188	9,827	10,411	11,280	9,756
Margin over feed cost ($/cow/year)	3,579	4,171	4,522	4,866	5,353	4,497
Feed cost ($/hl)	26.89	25.05	24.50	23.80	23.48	24.75
Forage cost ($/cow/day)	2.83	2.95	2.99	3.03	3.05	2.97
Concentrates cost ($/cow/day)	2.81	3.00	3.25	3.36	3.79	3.24
Minerals, vitamins and additives cost ($/cow/day)	0.29	0.31	0.29	0.35	0.36	0.32
Forage milk[5] (kg/cow/year)	2,824	3,312	3,516	3,888	4,256	3,600
Forage (kg dry matter/cow/year)	5,017	5,259	5,329	5,525	5,631	5,352
Concentrates (kg dry matter/cow/year)	2,391	2,571	2,627	2,720	2,880	2,637
Total dry matter intake (kg/cow/year)	7,408	7,830	7,956	8,244	8,511	7,989
Energy supplement (kg dry matter/cow/year)	1,852	1,905	1,926	1,890	1,935	1,901
Protein supplement (kg dry matter/cow/year)	540	666	701	830	945	736
Feed efficiency[6]	1.12	1.20	1.25	1.30	1.35	1.24
Standard milk/concentrates ratio[7]	3.06	3.18	3.32	3.38	3.44	3.28
Concentrates cost ($/hl)	13.93	13.20	13.24	13.05	13.48	13.38
Milk value ($/hl)	72.87	72.22	71.90	71.92	71.72	72.13
Margin over feed cost ($/hl)	45.98	47.18	47.40	48.11	48.24	47.38
Margin over feed cost ($/kg butterfat)	10.86	11.29	11.38	11.57	11.64	11.35

[1] Valacta customers, with validated data for the 12 months ending at the last test prior to December 31, 2018.
[2] The 0-20 ranking gives the average of the 20% of herds with the lowest milk production, etc.
[3] Corrected milk is adjusted to 2nd lactation, 150 days in milk, 4.0% fat and 3.35% protein.
[4] The category "Other" is excluded from these fields.
[5] Based on energy and protein.
[6] The calculation (standardized milk kg/dry matter kg) includes all cows (not just milking cows).
[7] As fed.

ATLANTIC HOLSTEIN HERD STATISTICS BASED ON MILK PRODUCTION LEVEL (AVERAGE BY 20% MILK PRODUCTION GROUPS)

Milk Production (20% Ranking)	0-20	21-40	41-60	61-80	81-100	Total/ Ave
Number of herds	57	57	57	57	57	285
Number of cows in the herd	69.3	78.8	108.3	124.5	154.4	107.1
Milk (kg/cow/year)	7,471	8,956	9,738	10,547	11,981	9,739
Butterfat (kg/cow/year)	294	359	396	429	487	393
Butterfat (%)	3.93	4.01	4.06	4.07	4.07	4.03
Protein (kg/cow/year)	243	294	318	344	392	318
Protein (%)	3.25	3.28	3.27	3.26	3.27	3.27
SCC ('000 c. s./ml)	255	226	214	183	188	213
Linear score	2.8	2.5	2.5	2.3	2.3	2.5
Corrected milk1 (kg/cow/day)	27.8	32.8	35.2	38.0	43.3	35.4
Culing (%)	36.4	38.2	35.1	37.8	38.8	37.3
Voluntary cull2 (%)	6.8	9.7	5.3	6.0	8.6	7.3
Involuntary cull2 (%)	22.1	23.9	23.8	26.7	24.7	24.3
Cows in lactation (%)	83.9	84.2	85.8	86.2	86.2	85.3
3rd lactation + (%)	40.7	40.1	40.4	39.2	38.2	39.7
Average age (yr-month)	4-3	4-0	3-11	3-9	3-7	3-11
Age at 1st calving (months)	29.0	27.4	26.0	25.4	24.4	26.4
Calving interval (days)	452	431	424	408	406	424
Days in milk at 1st breeding	97	89	86	81	78	86
Breeding/cow/year	1.80	2.01	2.05	2.03	2.12	2.00
Days dry	79	77	69	66	66	71
Days open	172	151	144	128	126	144
Milk value($/cow/year)	5,077	6,140	6,796	7,321	8,365	6,740

[1] Corrected milk is adjusted to 2nd lactation, 150 days in milk, 4.0% fat and 3.35% protein.

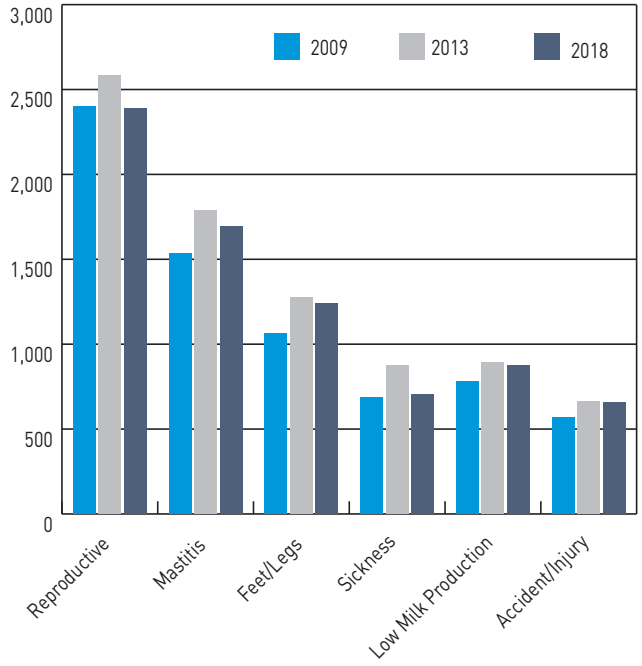
[2] The category of OTHER is excluded from this field.

MANAGEMENT CENTER BENCHMARKS

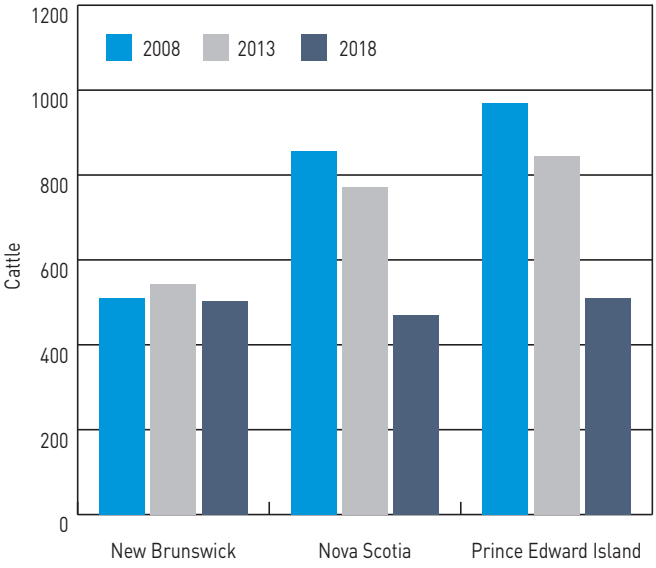
Measure	New Brunswick Percentile				Nova Scotia Percentile				Prince Edward Island Percentile				Newfoundland Percentile			
	25th	50th	75th	90th	25th	50th	75th	90th	25th	50th	75th	90th	25th	50th	75th	90th
Annual Milk Value ($)	5,444	6,326	7,185	7,806	5,847	6,591	7,517	8,226	5,936	6,680	7,357	7,982	6,611	8,691	9,663	10,326
Somatic Cell Count ('000/ml)	327	258	201	156	326	276	221	166	297	236	197	162	247	213	166	149
Udder Health (SCC Linear Score)	3.2	2.8	2.5	2.2	3.2	2.8	2.5	2.2	3.0	2.7	2.5	2.3	2.5	2.5	2.4	2.1
Age at 1st Calving (Year-Month)	2-6	2-4	2-1	2-0	2-6	2-3	2-1	2-0	2-6	2-4	2-2	2-0	2-2	2-1	2-1	2-0
Calving Interval (months)	14.8	14.3	13.4	13.1	15.2	14.5	13.6	13.1	15.5	14.5	13.8	13.4	14.1	14.0	13.1	12.7
Longevity (% of herd in 3+ lactation)	38	42.7	49.6	54	35	41	46	50	32	36	43	50	29	36	41	49
Herd Efficiency (% of herd in milk)	85	86	88	90	83	86	88	90	81	86	88	89	84	85	89	89
Herd Turnover (% of herd in removed)	50	39	33	26	50	40	33	28	54	48	38	31	45	39	32	26
Number of Cows	59	77	121	188	53	72	107	165	54	74	105	141	106	216	220	225
Management Milk (kg)*	29	33	38	41	31	35	39	43	32	36	39	43	28	37	40	43
Days Dry	85	72	64	58	96	81	67	58	108	87	70	59	71	66	61	60
Days to 1st Breeding	105	96	84	76	109	98	84	75	114	96	82	71	93	88	76	73

* Management Milk measure: brings age, stage of lactation and energy-corrected milk to a standard number for comparison purposes.

TOP DISPOSAL REASONS – ALL PROVINCES



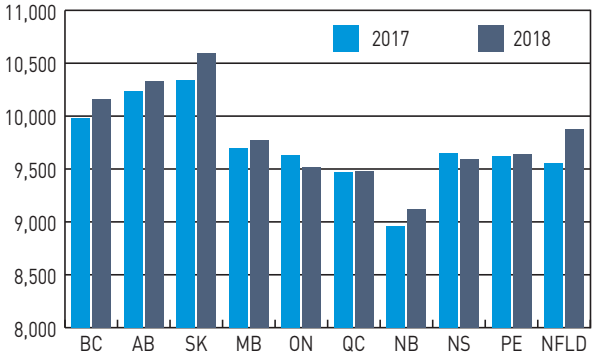
LIVE CATTLE MOVEMENT



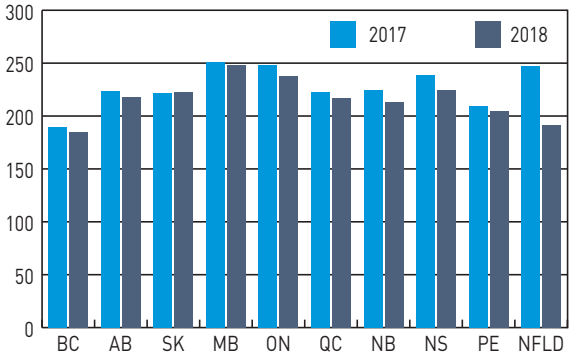
DAIRY HERD STATISTICS BY PROVINCE

Province	Recorded Herds		Recorded Cows		Average Herd Size		% Herds > 100 Cows	% Recorded Herds
	2017	2018	2017	2018	2017	2018		
Newfoundland	7	6	1,223	1,093	174.71	182.2	83.33	25.90
Prince Edward Island	95	91	8,656	8,539	91.12	93.8	29.67	56.40
Nova Scotia	134	120	12,736	11,761	95.04	98.0	32.50	61.80
New Brunswick	122	107	12,184	11,535	99.87	107.8	37.38	62.40
Quebec	4,047	3,781	278,218	260,688	68.75	68.9	14.52	74.90
Ontario	2,672	2,557	241,560	227,776	90.40	89.1	25.38	73.86
Manitoba	165	157	30,088	28,762	182.35	183.2	54.14	58.18
Saskatchewan	89	82	15,929	16,252	178.98	198.2	75.61	48.17
Alberta	376	351	59,880	56,909	159.26	162.1	73.50	68.17
British Columbia	280	270	48,516	51,135	173.27	189.4	64.07	55.18
CANADA	**7,987**	**7,522**	**708,990**	**674,450**	**88.77**	**89.7**	**25.09**	**71.59**

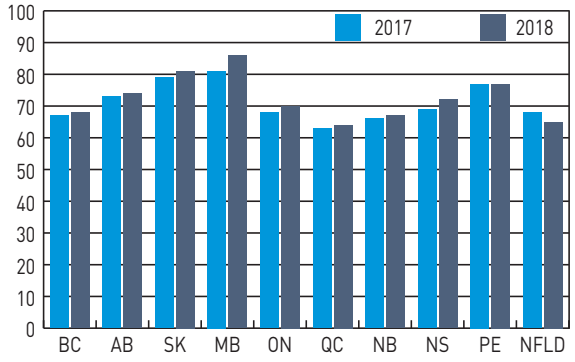
MILK PRODUCTION (KG) PER COW PER PROVINCE



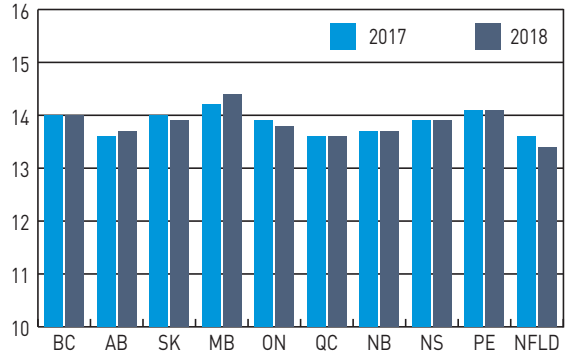
SOMATIC CELL COUNT ('000) AVERAGE BY PROVINCE



DRY PERIOD (DAYS) AVERAGE BY PROVINCE

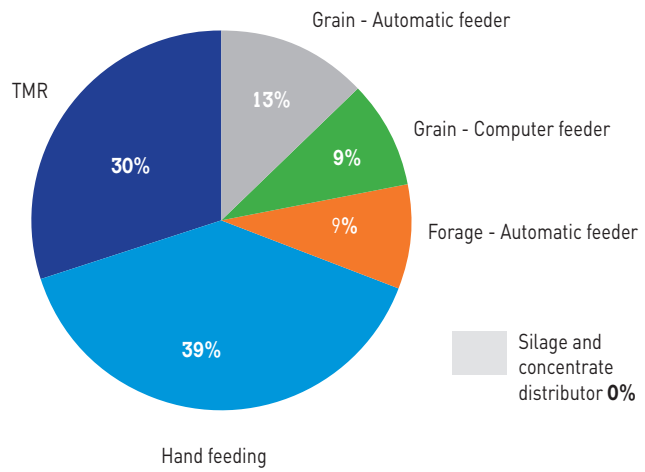


CALVING INTERVAL (MONTHS)

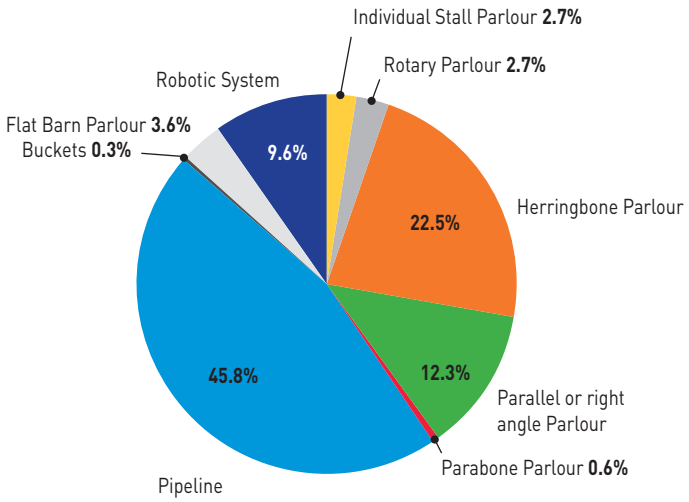


Management System Type in the Atlantic Provinces

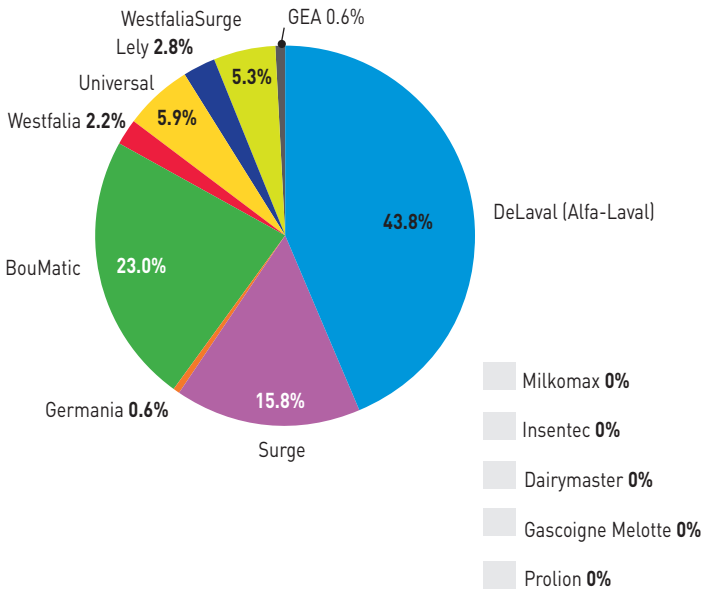
FEEDING SYSTEM



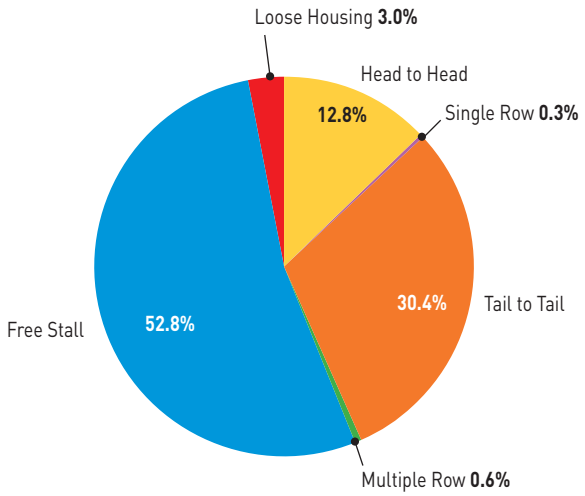
MILKING SYSTEM TYPE



MILKING SYSTEM BRAND



BARN TYPE



VALACTA-ATLANTIC PRODUCTION AND MANAGEMENT AVERAGES - DECEMBER 2018

Breed	Average	Percentile 10	Percentile 90
MILK PRODUCTION (KG)			
Holstein	9,754	7,626	11,816
Ayrshire	6,986	5,927	8,123
Jersey	6,598	5,884	7,621
All Breeds	9,538	7,219	11,759
AGE AT FIRST CALVING (YY-MM)			
Holstein	2-2	2-6	1-11
Ayrshire	2-4	2-7	2-1
Jersey	2-2	2-4	1-11
All Breeds	2-2	2-6	1-11
WEIGHT AT FIRST CALVING (KG)			
Holstein	612	554	657
Ayrshire	N/A**	N/A**	N/A**
Jersey	N/A**	N/A**	N/A**
All Breeds	605	552	657
LONGEVITY (% 3rd LACTATION PLUS)			
Holstein	39.7	29.7	50.9
Ayrshire	51.7	45.3	60.1
Jersey	45.0	35.7	56.6
All Breeds	40.4	30.1	51.5
SCC ('000 S.C./ML)			
Holstein	213	315	123
Ayrshire	205	281	121
Jersey	205	285	130
All Breeds	213	315	123
OTHER PARAMETERS (ALL BREEDS)			
Cows in Milk (%)	85	79	90
Replacement Rate (%)	36.5	22.3	52.3
Dry Period (days)	72	98	53
Calving Interval (days)	424	465	390
Linear Score	2.5	3.1	1.9

	Average	Percentile 10	Percentile 90
FAT, KG (%)			
Holstein	393 (4.02)	300 (3.75)	483 (4.27)
Ayrshire	300 (4.28)	253 (4.11)	357 (4.41)
Jersey	331 (5.02)	292 (4.84)	379 (5.21)
All Breeds	388 (4.07)	295 (3.77)	478 (4.36)
PROTEIN, KG (%)			
Holstein	319 (3.27)	249 (3.13)	249 (3.13)
Ayrshire	234 (3.35)	192 (3.21)	192 (3.21)
Jersey	249 (3.77)	218 (3.66)	218 (3.66)
All Breeds	313 (3.29)	238 (3.14)	238 (3.14)
AVERAGE HERD WEIGHT INCLUDING COW-HEIFERS (KG)			
Holstein	660	617	689
Ayrshire	N/A**	N/A**	N/A**
Jersey	N/A**	N/A**	N/A**
All Breeds	654	599	688
MARGIN OVER FEED COST ($/COW/YEAR) *			
Holstein	4,327	2,797	5,650
Ayrshire	N/A**	N/A**	N/A**
Jersey	N/A**	N/A**	N/A**
All Breeds	4,231	2,901	5,578

* Milk value minus feed cost.
** A minimum of 5 herds is required to calculate an average; this minimum is not met.

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