

# Using Dairy Herd Improvement Data to Monitor Herd Sustainability

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## What is a Sustainable Herd?

Productivity?

Profitability ?

Longevity?



Can we measure, benchmark and monitor herd sustainability?



# **The Approach**

- Committee of industry experts from various fields
  - Nutrition and Management, Welfare, Economics, Milk Recording
- Committee Mandate:
  - Develop a Sustainability Index
  - Focus on routinely DHI collected data
  - Identify key parameters that contribute to evaluate herd sustainability
  - Cover the full "life cycle" at the farm, without overlapping among chosen criteria



# What is the Sustainability Index?

10 indicators grouped in four categories:



# Longevity and Culling



### Cows in 3<sup>rd</sup> Lactation or + (%)

 Cows calving for their 3<sup>rd</sup> & + time in last 12 months

### Involuntary Culling Rate (%)

 Cows culled in last 12 months for reasons other than production

### Cow Mortality Rate (%)

 Cows dead in last 12 months



# **Feeding and Production**



### MUN <5 or >18 mg N/dL (%)

 % « extreme » individual cow MUN results in last 12 months

### Management Index for Milk (kg)

 Evaluates expression of genetic potential

• (P = G+E)

#### Transition Cow Index

 Objective assessment of transition success







### Calf mortality rate 0-24h (%)

 Calves declared dead within 24 h after birth in last 12 months

### Age 1<sup>st</sup> calving (mo)

 Average age 1<sup>st</sup> calving of all heifers calving in last 12 months





Cows with BHB > 0.20 mmol/L (%)

 % individual cow BHB results above threshold in last 12 months

# Cows with SCC >200,000 cells/mL (%)

 % individual cow SCC results above threshold in last 12 months

# **The Sustainability Index**

### • Calculation:

- Each herd gets a percentile ranking for each criteria (1-99)
- Sum of all 10 criteria yields the Sustainability Index
- Index allows percentile ranking to compare all herds (1-99)
- Rules
  - Lactanet client for at least 12 months
  - Minimum 6 tests in last 12 months
    - Minimum 50% tests with samples
    - Minimum 50% cows with milk samples per test
  - Minimum 7 of 10 indicators
    - \*\* BHB, MUN and TCI are \$\$; 50<sup>th</sup> percentile attributed if no value available
- Calculated and updated three times per year





## **Top, Average and Bottom Herds**

	Bottom 10%	Average	Top 10%	
Production				
Fat (%)	4,16	4,10	4,09	
Protein (%)	3,22	3,18	3,18	
SCC ('000 s.c./ml)	263	193	137	
Milk (kg/year)	8414	9844	11023	
Corrected Milk (kg/day)	31,4	36	40,3	
Demographics				
3rd lactation or + (%)	37	42	46	
Culled Cows (%)	39	34	32	
Involuntary Culling (%)	23	19	15	
Age at First Calving (months)	27,1	25,2	23,9	
Reproduction				
Calving Interval (days)	432	409	395	
Days Open	152	129	116	actanot

\* Analysis based on data collected from 2, 143 farms on milk recording (Quebec and New-Brunswick)

### Sustainable and Profitable, it's Possible!



# A profit margin of over \$90,000

\*Simulations done using a fictional herd with a **quota of 100** kg.

\*\* NB: Improving one's Sustainability Index is a **set of good practices** that can change from one operation to another, as **each farm is unique** 



### The Best Herds for the Sustainability Index and Milk Value

	Top 10 %		
	Sustainability Index	Milk Value	
Production			
Fat (%)	4.09	4,03	
Protein (%)	3.18	3,15	
SCC ('000 s.c./ml)	137	170	
Milk (kg/year)	11023	11990	
Corrected Milk (kg/day)	40.3	43,2	
Demographics			
3rd lactation or + (%)	46	41	
Culled Cows (%)	32	38	
Involuntary Culling (%)	15	21	
Age at First Calving (months)	23,9	24,2	
Reproduction			
Calving Interval (days)	395	401	
Days Open	116	121	c

## Effect on the Operation's Margin



# The Cost of Replacements is Important (Example with 100 kg Quota)

	Sustainability Index	Milk Value	
Nbr of cows necessary	83,4	77,8	
Labor	90 890 \$	88 630 \$	
Replacement	80 730 \$	90 000 \$	
Operation Margin	197 240 \$	190 900 \$	
		Lacta CANADIAN NETWORK FOR D	

# Examples of Practices that Improve the Sustainability Index





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Watch our Sustainable and Profitable, it's Possible! webinar

