Udder Health: Reports to Manage SCC

- March 28, 2023

“Udder Health” is the second and second-largest component of Lactanet’s Herd Performance Index (HPI), and is determined by a herd’s mean overall annual Somatic Cell Count (SCC).

Worth 150 points out of the total 1000, Udder Health was chosen as an HPI factor for its role in milk quality and its impact on overall animal health.

Udder Health is determined by the 12-month average for the herd's Somatic Cell Count (SCC) when compared with their appropriate regional benchmark.

Udder health as a subject is much more nuanced than simply hitting the lowest possible cell count via milking management and culling practices, as it can be influenced by factors like a cow's environment, management practices, and the individual cow herself. It's most important to understand how each factor can affect both herd and animal SCC, and what count is reasonable to achieve given your herd's specific conditions.

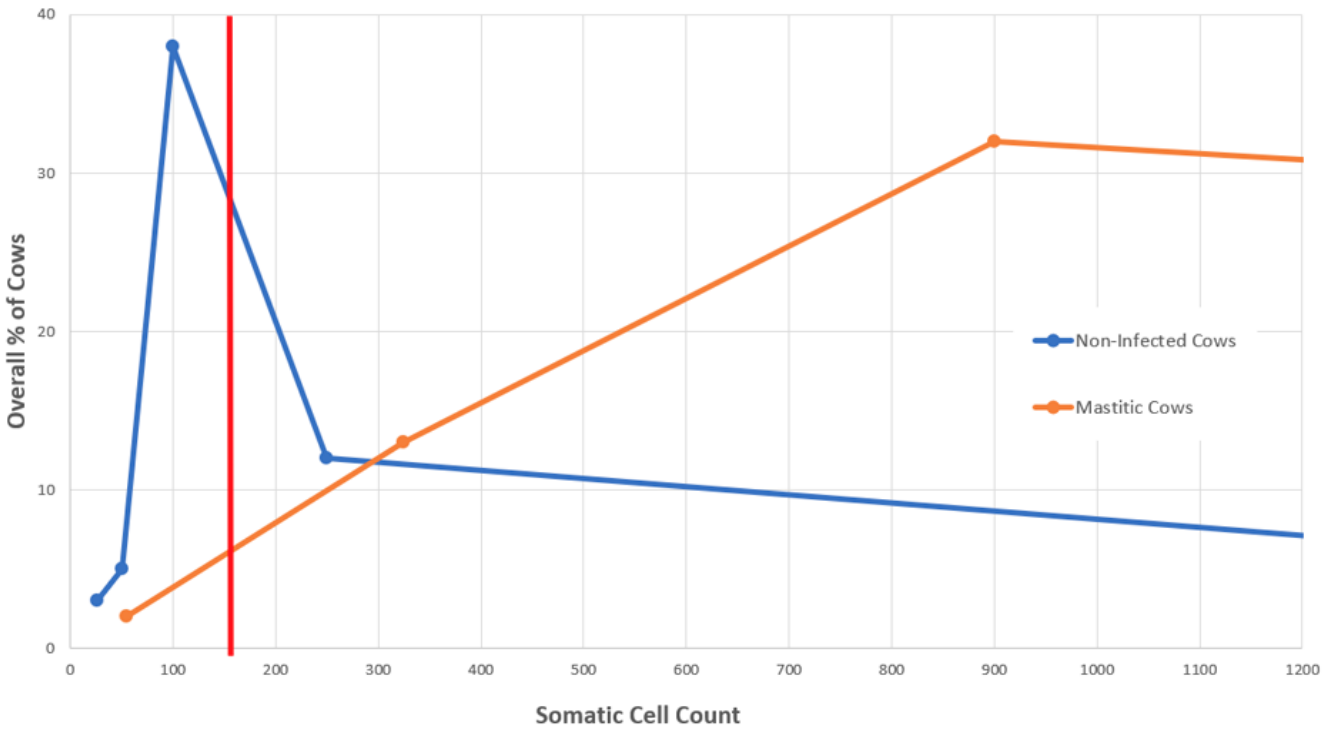
Background

Somatic Cells are part of a cow's immune response involved in fighting infection and repairing damaged tissue. A certain amount of these cells

will exist naturally in a cow's udder, but when mastitis occurs the cow's immune system responds by sending more somatic cells to the udder to help fight it. Counting these cells provides an excellent marker for farms to quickly evaluate udder health and identify cows may be experiencing mastitis without other clinical signs*.

Lactanet sets the SCC ceiling at 200 000 cells/mL for flagging on all reports, based on historical herd health research: this threshold encompasses approximately 85% of animals with mastitis (both clinical and subclinical cases)[1].

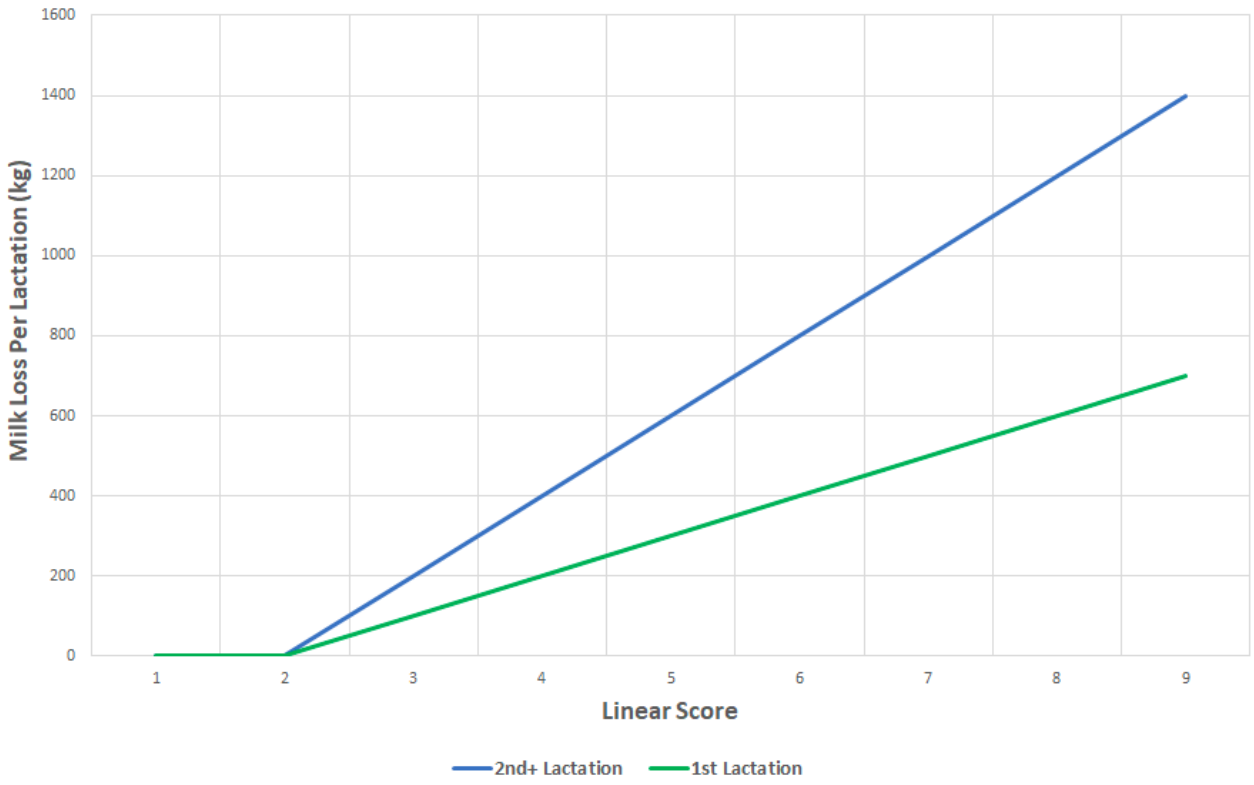
Figure 1.



85% of Mastitic cows (orange line) will have a somatic cell count higher than 200k cells/mL (data points to the left of the red line). Around 85% of non-infected cows (blue line) will not (data points found to the right of the red line).

*Some animals may have mastitis with a lower cell count than 200 000 cells/mL, and other animals may have a count of over 200 000cells/mL and not have mastitis at all. These animals are in the 15% minority. Somatic cells are involved in other processes, and some cows' "normal" count may be higher or lower than this standard.

Figure 2. Milk Loss per lactation as a function of Linear Score



As SCC climbs, milk loss occurs at an increasing rate as well. The relationship between somatic cell count and milk loss is not perfectly linear, so to help track it Lactanet provides Linear Scores (LS) to animals.

The Linear Score, as its name would suggest, represents milk loss due to high SCCs in a linear way. For second lactation animals and older, each LS unit above 2 represents a milk loss of 200kg per lactation (~0.66kg/day). For first lactation animals, the loss is around half, but no less important to keep in mind. While the HPI's Udder Health score is based on net SCC, LS is still a beneficial way to track udder health when production loss is a focus for your herd.

Regardless of if it’s a quality or an income-based target you prefer, understanding the difference between the use of Somatic Cell Count and the Linear Score is useful, and Lactanet provides both to you so that the choice is always yours.

To take your Udder Health understanding to another level, Lactanet offers several management reports and markers to inform you on your herd’s status:

Reports to Manage SCC and Udder Health

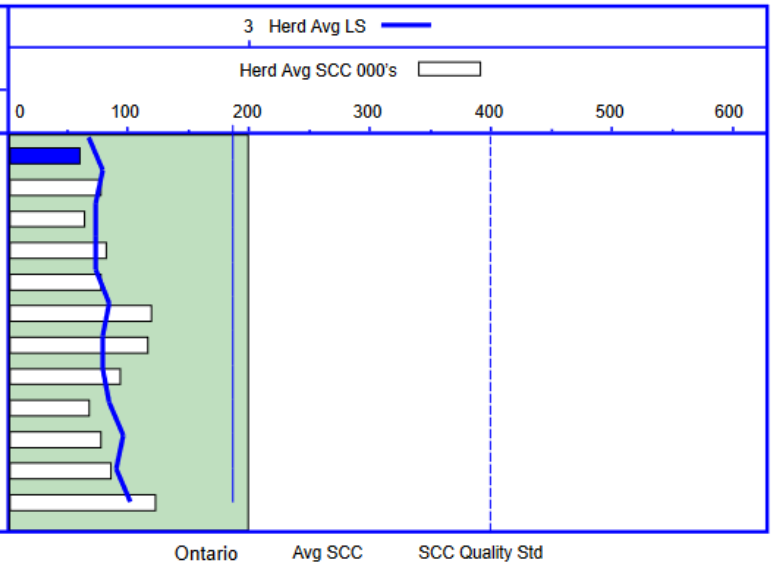
Regardless of what regional reports you have access to, there are some main goals that each Lactanet Somatic Cell Count Report can help outline:

- Overall SCC for all individual cows in the herd
- Detection and control of subclinical and clinical mastitis cases
- Outlining of LS (milk loss) per cow affected by high SCC
- Estimation on the loss in dollar value for each instance of high SCC
- Establishing of groups most affected by clinical and subclinical mastitis by parity (age) and stage of lactation
- Evaluation of contributions of specific cow SCC to bulk tank SCC
- Providing of historical information on specific cows’ and groups’ SCC

SCC Herd Summary and SCC Cow Summary

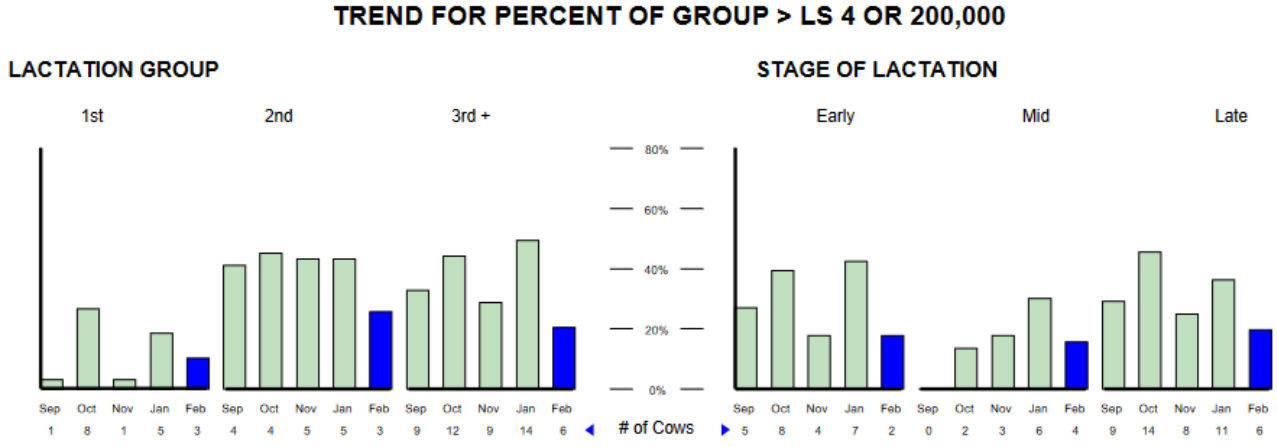
HERD SUMMARY

Test Date	Avg LS	Avg SCC 000's	> LS 4 or 200,000	
			Cows	%
22 Feb 23	**1.1**	**58**	**17**	**6**
11 Jan 23	1.3	76	25	8
06 Dec 22	1.2	62	18	6
08 Nov 22	1.2	80	20	7
28 Sep 22	1.2	76	22	7
29 Aug 22	1.4	118	24	8
27 Jul 22	1.3	115	23	8
15 Jun 22	1.3	92	23	9
10 May 22	1.4	66	20	8
07 Apr 22	1.6	76	25	10
02 Mar 22	1.5	84	19	8
26 Jan 22	1.7	121	25	10



The Herd Summary report is a simple way to narrow in on groups of cows who may be experiencing higher somatic cell counts than desired. This report averages the current SCC against provincial averages and quality standards, as well as an overall trend report for the current test and past 11 tests. This can make trend tracking and identification of sudden changes much easier to single out!

The report also identifies groups by parity and stage of lactation with a highlight on the current test. The Lactation Group and Stage of Lactation sections identify animals with an SCC >200 000 cells/mL or a LS >4 (200kg milk loss) for specific actioning.



As in the above example, a farm can use this information to quickly

identify more specific challenges in udder health: which groups are most affected? Are they specifically affected, or is it more general across the herd? Risk factors associated to these identifications can be addressed efficiently to improve udder health and milk quality.

The second page of each SCC Herd Report features a management list with more specific details on flagged cows (animals over 200,000 cells/mL). It outlines information like their DIM, their overall % of the herd's SCC, Linear Score, how many tests the animal has had a high SCC, lactation loss in $ value, and their contribution to the bulk tank SCC total. This information can be used as needed to make management decisions like breeding choices, antibiotic treatment intervention, culling, early dry-off, and more.

The Cow Summary Report is also available for specific tracking of animals over the course of a lactation if a chronic high SCC is of concern.

Chain # / Cow Name	Lact #	Days in Milk	% of Herd SCC	000's SCC/ml / Linear Score												Lact Avg	
				08 Feb	04 Jan	02 Dec	20 Oct	21 Sep	16 Aug	12 Jul	08 Jun	05 May	24 Mar	03 Feb	15 Dec	Curr	Prev
1 / 1	4	234		19 / 1	20 / 1	21 / 1	19 / 1	18 / 1	9 / 0	7 / 0	Dry	Dry	21 / 1	20 / 1	48 / 2	16 / 1	23 / 1
2 / 2	1	328		35 / 2	25 / 1	32 / 1	22 / 1	16 / 0	NS	87 / 3	13 / 0	21 / 1	20 / 1			32 / 1	
4 / 4	2	46		17 / 0	51 / 2	Dry	286 / 5	178 / 4	154 / 4	128 / 3	125 / 3	130 / 3	87 / 3	136 / 3	73 / 3	32 / 1	141 / 3
5 / 5	1	160		27 / 1	22 / 1	23 / 1	465 / 5	127 / 3								136 / 2	
7 / 7	6	344		112 / 3	64 / 2	30 / 1	47 / 2	17 / 0	19 / 1	14 / 0	NS	27 / 1	21 / 1	Dry	187 / 4	32 / 1	30 / 1
8 / 8	2	271	1	393 / 5	999 / 6	1150 / 7	NEM	827 / 6	3955 / 8	305 / 5	NS	Dry	29 / 1	31 / 1	25 / 1	1367 / 6	45 / 2
9 / 9	1	281		9 / 0	13 / 0	17 / 0	29 / 1	13 / 0	14 / 0	14 / 0	15 / 0	TF				16 / 0	
10 / 10	2	62		25 / 1	17 / 0	Dry	52 / 2	31 / 1	35 / 2	74 / 3	NT	15 / 0	13 / 0	10 / 0	12 / 0	20 / 1	27 / 1
11 / 11	5	397		31 / 1	30 / 1	30 / 1	35 / 2	19 / 1	14 / 0	9 / 0	NS	10 / 0	32 / 1	11 / 0	Dry	21 / 1	35 / 1
12 / 12	1	57		18 / 1	223 / 4											117 / 2	

An example of the Cow Monitor SCC report

Quebec–Atlantic

Reports in Quebec-Atlantic further streamline the SCC identification process by offering the Udder Health Status report. This report divides the herd into categories:

- Fresh – New Infection
- Lactation – New Infection
- Chronic Infection (cows with >2 tests with high SCC)

Some herds may also have a 4th section, identifying animals with high counts from a previous lactation, who have calved in again with a high SCC.

Cow Name / Chain #	Test Day Data					% Of Herd SCC	Previous LS								Estimated Lactation Milk Loss $	Tank SCC This cow removed	Days Bred	Times Bred	Status	Cow Rating	Notes
	Lact #	Days in Milk	Milk kg	LS	SCC 000's/ml		Jan	Dec	Sep	Aug	Jul	# Tests > 4	Lact Avg	Prev Lact Avg							
Fresh Cows – New Infection						**0 of 10 = 0 %**															
New Infection in Lactation						**3 of 69 = 4 %**															
101	3	237	33.5	6	761	**6**	0	0	0	0	0	1	1	2	**0**	135	105	3	B	99	
109	2	219	36.4	8	3704	**31**	4	5	4	4	6	4	5	0	**403**	100	87	2	B	109	
1097	2	256	32.6	4	213	**2**	3	3	6	0	0	2	3	3	**101**	141	125	1	B	104	
Dry period – Failure to Cure						**1 of 2 = 50 %**															
100	4	10	29.0	4	262	**2**			4	4	4	1	4	3	**302**	141		0	O	93*	
Chronic Infection						**5 of 81 = 6 %**															
85	6	196	27.3	5	370	**2**	5	5	3	2		3	4	3	**265**	140	80	2	B	94	
89	5	78	42.4	8	2706	**26**	8	0	4	2	1	2	5	1	**428**	106		0	O	107	
116	2	38	48.7	5	377	**4**	5		2	2	2	2	5	3	**378**	138		0	O	90*	
120	1	234	29.3	4	230	**2**	5	4	6	6	5	6	5		**183**	141	142	1	B	107	
122	1	91	36.5	5	401	**3**	7	7				3	6		**265**	139	1	1	B	109	

In the above example, the relative number of New Infections in Lactation is higher than in the other groups—this information could be used to evaluate environmental risks. However, it is worth noting that only 5% of the herd is identified as having an issue ("5 of 81", and well within acceptable benchmarks), so this information should also always be considered in a wider perspective!

The specific division is useful for identifying where the majority of cases of mastitis are found in addition to the information in the SCC reports, and therefore specifically target these groups for interventions. It also outlines the relative number of animals in each group for easy threshold identification.

Regardless of which report your farm prefers to use, having the information available at the click of a button via MySite allows for streamlined intervention, prevention planning and overall management response.

To check Lactanet's Udder Health benchmarks and other factors by region or milking system and get started on the path to HPI improvement, find our benchmark files here.

[1] Sharma N, Singh N, Bhadwal M. Relationship of Somatic Cell Count and Mastitis: An Overview. Anim Biosci 2011;24(3):429-438. DOI: https://doi.org/10.5713/ajas.2011.10233

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