



Leukosis product innovation at Lactanet: a new test and an integrated and optimized screening approach

• February 5, 2025

Bovine leukosis is an incurable disease affecting the health, productivity and profitability of dairies. A cow infected with the bovine leukosis virus generates an average of 635 CAD/year less than an uninfected cow (Kuczewski et al., 2019). About 90% of Canadian herds have at least one infected cow, but many herds actually have a significant proportion infected cattle (Kuczewski et al., 2019; Nekouei et al., 2015).

Given the large number of herds affected and the significant impacts of this disease, it is crucial to implement screening and control measures. The goal is to gradually reduce the presence of this disease in Canadian herds, an ambitious and necessary project for the prosperity of the dairy industry. One of the first steps is to identify the infected animals in the herd in order to, for example, isolate or cull them as they pose a risk to

healthy animals

A new leukosis test

In collaboration with the [Chair in Biosecurity at the Université de Montréal's Faculté de médecine vétérinaire](#), Lactanet has validated a new test that will soon be available for the detection of leukosis in individual cows. And, from now on, this test will be the leukosis test offered at Lactanet.

It uses ELISA technology to detect antibodies against the bovine leukemia virus (BLV), which tells us if a cow has been exposed to the virus. Since the disease cannot be cured a cow with a positive ELISA test is considered to be actively, chronically infected.

For its validation, this new ELISA test was compared to other available leukosis tests (qPCR and lymphocyte count on blood samples). The results of this comparison demonstrate that the ELISA test is very efficient and reliable, with a better ability to detect positive cows, and an ability to confirm negative cows equivalent to that of other tests. The interpretation of the test has been optimized to further maximize its ability to detect negative cows.

It is important to understand that screening tests are not perfect. This is partly due to the dynamic nature of diseases, meaning that a disease develops over time and in a slightly different manner in each animal—every individual is different. That is why we validate and optimize the tests offered at Lactanet, and for their intended use (milk screening). In addition, as tests evolve, we revalidate and adjust them to ensure their best effectiveness and reliability.

Important change!

A single interpretation threshold, with only two possible interpretations of the results: either negative or positive. Cattle will no longer be

marked as “suspect”.

Benefits of the new ELISA test:

- Improved screening: maximized detection of negative cows and very good ability to detect infected cows, in addition to having minimized false-positive results.
- Practical use: no inconclusive (or “suspect”) results that leave uncertainty and make it difficult to manage and make decisions.

The phenomenon of carryover in milk recording samples

To fully validate this new test, it was important to evaluate the possible effects of residual milk, i.e. the risk of obtaining a false positive due to the contamination of the milk sample by the milk of the milked cow just before. This is because milk carryover from one positive cow to the next cow in the milking order can affect test results, “contaminate” the sample, and affect the milk recording test results. Obviously, this situation cannot occur when the sample is taken manually.

In the worst-case scenario, if the transfer of residual milk is not well-controlled during milk recording, the test will be less accurate when a healthy cow is milked right after an infected cow. This loss of accuracy leads to an increased risk of false-positive results, which are healthy cows that will be falsely identified as positive by the test.

To avoid false positives in leukosis screening results, here are some recommended best practices:

- Control of residual milk: Optimize sampling and milking equipment to reduce residual milk after each milking and to avoid

contamination between samples. Consult your equipment dealer and your Lactanet technician for further advice.

- Sampling order: Whenever possible, sample cows starting with those that are least likely to be infected (young cows) to those that are most likely to be infected (known positive status, older cows, clinical suspicions, etc.).
- Confirmation with a manually collected milk sample (“hand-strip”): Before taking any action for a cow that has tested positive (such as culling), confirm her status with a milk sample collected manually and send it along with your next test, or use one of the other available tests.
- Integrated approach to making decisions for positive cows: Using the new national leukosis reports to make informed decisions (see next section of the article).

Integrated screening approach at Lactanet

With the validation of the new leukosis test, the Lactanet Leukosis reports have been redesigned to transform the product into more than just a regular health test. It is now a comprehensive management and decision support tool.

The Leukosis test offered at Lactanet is designed to be a screening tool used to detect the disease and monitor its evolution in herds. Thus, as with other herd tests offered at Lactanet, a Herd Summary Report has been developed with a test history to illustrate the herd’s status and to facilitate monitoring over time.

The Cow Summary Report has also been completely reimagined to incorporate milk recording and health test data. This new version of the report not only displays the test results but also assesses the impact of the disease on the productivity and health of cows that test positive. This allows for the identification of the most affected positive cows, enabling

better-informed decisions based on their overall performance rather than just a single test result.

New National Leukosis Reports

Example of the new Leukosis Report - Individual testing results

Leukosis detection			Individual testing												
NAME	HERD NUMBER	PAGE	TEST DATE	SAMPLE COLLECTION DATE											
VETERINARIAN															
Consult your veterinarian for result interpretation and to determine any appropriate action.															
Registration # / NLID	Cow Name	Chain #	Test Results		Test Day Data			305 M Actual or Proj *	Cow Rating	Reproduction		Health Tests History (Latest)			
			Age yy mm	ELISA Score	Lact #	Days in Milk	SCC ooc's/ml			Days Open Days Bred	Times Bred	Status	Johne's	S.aureus	M. bovis
Positive															
1240000	January	002083	05-07	3.29	4	306	21	13093	114	202	2	Neg			
1240000	Riviera	002068	05-09	3.16	4	289	345	11787	100	214	1	Neg			
1240000	Bobbi	002356	02-09	2.12	1	275	64	7915	87	219	1	Neg			
1240000	Apple	001912	07-09	1.83	6	253	1173	10266	82	195	1	Neg			
1240000	Cindy	002402	02-00	1.79	1	28	56	12702	98		0	Neg			
1240000	Jesse	002401	02-00	1.39	1	37	55	11090	98		0	Neg			
1240000	Dora	002410	01-11	1.27	1	26	214	12712	98		0	Neg			
1240000	Skyler	002264	03-09	1.07	2	304	40	12787	109	196	3	Neg			
Negative															
1240000	Caberne	002417	01-10	.15	1	11	52	7614	98		0	Neg			
1240000	Billy	002380	02-05	.10	1	264	137	9102	98	210	1	Neg			
1240000	Tanya	002412	01-11	.10	1	42	284	8856	98		0	Neg			
1240000	Arkansa	002325	03-00	.04	1	339	70	9562	101	222	2	Neg			
1240000	Saskia	002265	03-09	.03	2	291	19	12742	107	211	1	Neg			
1240000	Sandra	002416	01-10	.01	1	12	62	6664	98		0	Neg			
1240000	Elani	002193	04-06	.01	3	285	48	12287	104	221	1	Neg			
1240000	Beth	002353	02-09	.01	1	276	17	8948	93	206	1	Neg			
1240000	Roxi	002372	02-07	.00	1	290	1194	8593	88	194	1	Neg			
1240000	Sprinkl	002370	02-07	.00	1	280	38	9611	89	219	1	Neg			
1240000	Leilani	002192	04-07	.00	3	275	33	11939	85	198	1	Neg			
1240000	Randy	002407	02-00	.00	1	40	17	10864	98		0	Neg			

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Example of the new Leukosis Report - Herd Summary

LEUKOSIS REPORT

Herd Summary



NAME

HERD NUMBER

PAGE

TEST DATE

SERVICE

VETERINARIAN

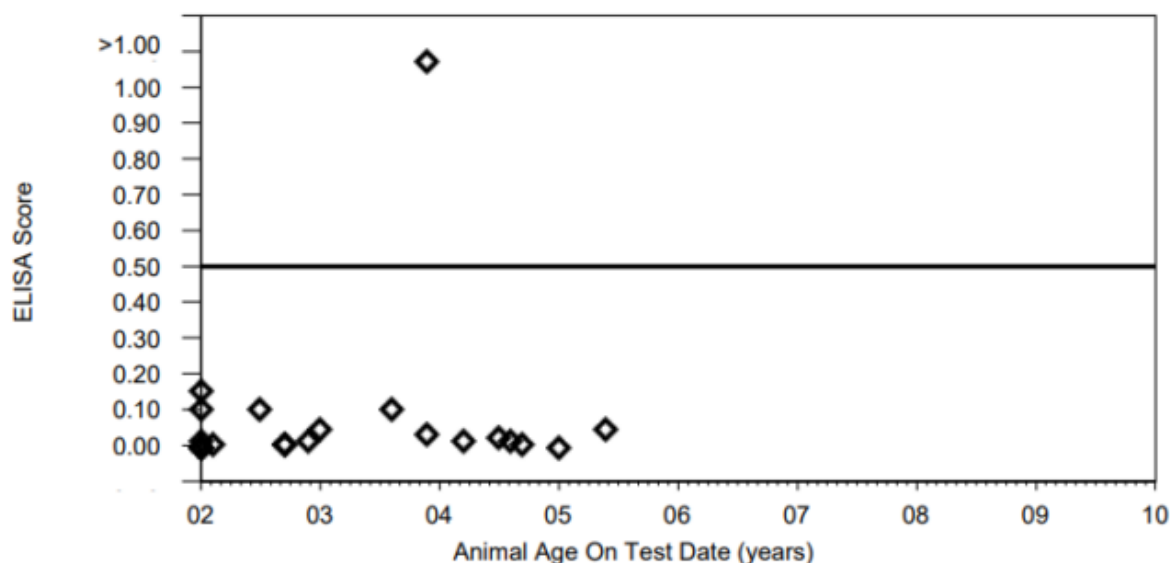
Interpretation of individual animal results should be made in consultation with the herd veterinarian, test may occasionally give false negative or false positive results. Lactanet accepts no responsibility for any loss or damage arising from the interpretation of these results. Please note that we sometimes must change testing materials and/or methods, and validate these to ensure uniformity of results. Please note that milk carryover from one positive cow to the next cow in the milking order can affect test results. Antibodies in the residual milk carried over could be sufficient to cause false positive results. Ensure appropriate sample collection procedure, and optimize sampling equipment and milking system to reduce the residual milk volume after each milking. Recording the milking order at the time of sampling can be useful in sorting out potential milk carryover cases.

HERD SUMMARY

RESULTS INTERPRETATION

Test Date	Total Samples	Samples Tested for	Positive Samples	% Positive of Samples	ELISA Score	Explanation	Effective date: 03 Aug 2024
17 Sep 2024	157	23	8	35	>=0.50	Positive High levels of Bovine Leukosis Virus (BLV) antibodies were detected. These cows are VERY LIKELY to be infected.	Very Likely
05 Jul 2024	156	17	4	24			
29 May 2024	156	13	2	15			
24 Apr 2024	166	7	1	14			
15 Mar 2024	169	13	1	8			
22 Jan 2024	166	15	3	20			
11 Dec 2023	161	23	1	4	<0.50	Negative BLV antibodies were not detected. These cows are VERY UNLIKELY to be infected.	Very unlikely
25 Oct 2023	150	12	0	0			
20 Sep 2023	157	39	14	36			
15 Aug 2023	135	20	4	20			
11 Jul 2023	154	11	2	18			
06 Jun 2023	161	17	1	6			
24 Apr 2023	145	5	2	40			
16 Mar 2023	156	46	5	11			
20 Oct 2022	154	13	4	31	<0.50	Negative BLV antibodies were not detected. These cows are VERY UNLIKELY to be infected.	Very unlikely
16 Aug 2022	147	3	0	0			

LEUKOSIS TEST RESULTS BY AGE



Conclusion

In summary, soon Lactanet will offer a complete solution for the detection and management of bovine leukosis, with reliable testing and integrating milk recording data to facilitate decision-making and improve the health and productivity of dairy herds. It is a practical, effective, and affordable approach, but above all, it is a unique and innovative Lactanet solution.

References

- Kuczewski, A., Hogeveen, H., Orsel, K., Wolf, R., Thompson, J., Spackman, E., & van der Meer, F. (2019). Economic evaluation of 4 bovine leukemia virus control strategies for Alberta dairy farms. *Journal of Dairy Science*, 102(3), 2578-2592. <https://doi.org/10.3168/jds.2018-15341>
- Nekouei, O., VanLeeuwen, J., Sanchez, J., Kelton, D., Tiwari, A., & Keefe, G. (2015). Herd-level risk factors for infection with bovine leukemia virus in Canadian dairy herds. *Preventive Veterinary Medicine*, 119(3-4), 105-113. <https://doi.org/10.1016/j.prevetmed.2015.02.025>

Partager



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By

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The Lactanet Leukosis Individual Cow Test offers a comprehensive solution for leukosis detection and management.

Leukosis Test

