Managing Health and Rumination Data: Getting the Most out of Your Technology

Jake Vermeer

Vermeer's Dairy Ltd, Email: jake@vermeersdairy.com

▪ Take Home Messages

- Rumination technology will allow for enhanced, in-depth fresh cow monitoring.
- Integrating rumination technology into existing management software makes using the technology simpler and opens the door to increased efficiencies.
- Tracking and storing rumination data will unlock new genetic metrics that farmers can use to identify profitable animals.

Farming today is not what it was 50, 25, or even five years ago. The pace of change has never been this fast and it will never be this slow again. Technology moves at lightning speed, but the slug of our busy day-to-day lives as dairy farmers creates an overwhelming question: how can I get more out of this technology? It's easy to find a grant and purchase that next piece of cutting-edge technology, be it a new feed program, milking robot or rumination technology. Producers may think that the initial investment is the hard part, when it is in fact extracting the return on investment that is most challenging.

The purpose of this paper is not a sales pitch; I have yet to receive any sort of commission for helping in the sale of rumination collars. I believe that in sharing my story of how our farm uses this technology, more farms will begin the conversation of 'how to increase return as well as animal welfare'. The cows are telling a story; we just need the means to listen.

We first incorporated rumination technology on our farm as an investment due to expansion. We had had leg pedometers for identification and heat detection purposes for 12 years and had begun to see that ~20% of the pedometers were failing and needed to be replaced. Coupled with a herd expansion, we decided that there was an opportunity to upgrade the existing technology and looked at neck collars with rumination technology. I quickly found a government grant to cover 60% of the cost and it seemed like an easy investment. Over the next eight weeks we converted from pedometers to neck collars on all the cows, and we were off to the races.

Fast forward to today. Most of my days begin by logging into our computer and checking DairyComp305 (DC305) for alerts and attention alarms. I scroll through the fresh cow list and check each fresh cow's rumination graph. I find by checking each one individually as opposed to only the cows identified with 'attentions', that I remain engaged as to who is fresh and where they are headed. Our farm has always understood that fresh cows are key to any successful operation. Three years ago, we were doing daily ketosis testing and temperature checks to detect problem cows early, but it meant longer lock up times and more labour. Now we never lock fresh cows and are able to track their progress at a micro-level. It sounds intense but tracking a cow's hour-by-hour rumination progress can help mitigate a lot of traditional fresh cow problems. Here are some examples of cows that have traditional issues as shown by rumination technology (Figure 1).
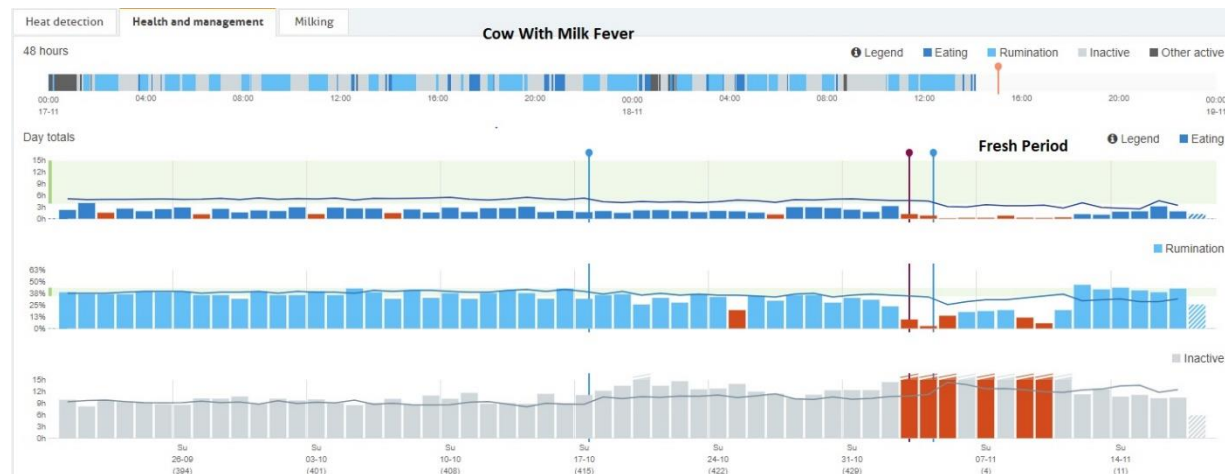
Figure 1: Information on cow health derived from rumination collars.

The above cow had a calcium deficiency after calving, she was treated, and a few days later we saw improvement. Notice that her eating graph was very low but her rumination remained strong; this indicated to me that she wasn't going to the bunk (obviously since she was down) but that the feed we were giving her was still causing her to ruminate.

We often see cows with a drop in rumination on the day of calving, which is normal. By all accounts, the calving period is a stressful time for cows. I caution producers to not overreact on the day of calving in terms of treating cows as a result of analyzing rumination graphs. It's on day two that I start to give credence to the graphs and start to watch the cows in terms of getting them back to pre-calving rumination levels. To be clear, rumination and eating time technology has not replaced walking through the fresh pen and using traditional cow signals to monitor cow performance, but it has become a translator for the cows to tell us what's going on.

One of the most important ways to get more out of rumination technology is to integrate the data into existing herd management software. One of my greatest pet peeves is having to use multiple software platforms in order to access my data. For us, we have GEA and Alta Genetic Nedap collars (IFER Tags). We also use DC305 on our farm for all of our herd management. When we invested in the technology, I made it clear to all parties that I wanted the two platforms to communicate and create a seamless user experience. We were able to accomplish most of this and we now have Nedap alerts and attentions being funnelled into DC305. It may not sound important, but it's been one of the main reasons I've been able to extract more out of the technology.

As a result of the integration, Nedap now sends the heat and rumination alarms three times per day. The heats trigger auto sorts and cows are bred after each milking. A report is generated from DC305 containing all cows with heat attentions that a member of our team uses to breed. The rumination and eating time alarms are also downloaded in a similar fashion and are auto sorted and checked using our health alarm SOP. When the data, such as a heat alarm, enters into DC305 we tag it on the cow card as '*HEAT NEDAP'*. This allows us to see cows during the involuntary wait period to make sure that they are cycling. Cows who do not have a 'tag' or event on their cow card are sorted onto the vet list prior to herd health. This sort of behaviour may indicate a cow who is cystic or anovular or may simply just be a missing collar. Either way, the cow is checked, and subsequent action is taken.

The same is done for health alarms. A cow who has a rumination or eating time alarm has a 'Dx.Attn' (Disease Attention) event entered onto her cow card (Figure 2). This allows us to track and store an individual cow's alarms, which is why we need DC305. Usually, your rumination technology data is linked to the device itself; therefore, when you change a collar or cull a cow, that data is lost and overwritten onto the new cow. By storing the data on DC305 it allows a unique opportunity to review long term data and identify trends, even genetic ones.

ID 3032

VERMEER FOUL 3032 124000013297303

Events | Items1 | Items2 | TestDays | PrevLacts | Lactation | Picture | Sensors

GROUP	4	MTOT	50	HICAL		-	RPRO	BRED
AGE	3-2	BFDAT	24/11/21	305M		12420	DSLH	21
LACT	2	MKDAT	22/ 9/21	NEDAP	984000714879327		TBRD	1
DIM	97	DUE21	-	DRY50		-	DUE	-

01/10/21	FRESH		Bull 4774 Live	12/11/21	HEAT	NEDAP	
12/10/21	HEAT	NEDAP		28/11/21	HEAT	NEDAP	
20/10/21	DX.ATTN	HI.ALERT		30/11/21	DX.ATTN	HI.ALERT	
21/10/21	DX.ATTN	DX.ALERT		16/12/21	BRED	PARSLY	2 D
22/10/21	HEAT	NEDAP		03/01/22	FOOTRIM	NONE	Trim Only
02/11/21	VACC	EXP1.2	Express.vx				

Figure 2: A DC305 cow card; the cow had multiple heats before her double Ovsynch breeding.

By creating an item called Dx.Attn we are able to see genetic trends within our herd in relation to health alarms. With the help of our genetic advisors at Alta Genetics we were able to distinguish the following trends.

We split our 1st lactation cows into two groups by productive life (GPL). The top group averaged a 3 for PL and the bottom a 1.3 for PL (Figure 3). We then compared the top and bottom groups for health events, including Dx.Attn. The top PL group had significantly less traditional health events but also way less Dx.Attn alarms, showing that our alarms are identifying genetic trends, something that we hope can become industry wide (Figures 4a and 4b).

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 By GPL     Pct  Count
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    3.00   53    172    >=2.2
    1.30   47    154    <=2.1

========= ==== ======
Total      100   326
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Figure 3: Distribution of cows based on productive life (PL)

#	Event	Total	Jan22	Feb22	Mar22	Apr22	May22	Jun22	Jul22	Aug22	Sep22	Oct22	Nov**	Dec21
1	FRESH	159	14	14	9	8	16	7	22	16	11	13	11	18
12	ABORT	12	0	0	0	1	1	1	3	1	2	2	1	0
13	DNB	9	0	0	0	0	0	0	1	0	7	0	1	0
36	LAME	50	3	1	7	4	4	5	7	6	8	1	2	2
37	MAST	7	1	0	0	0	2	1	2	0	0	0	0	1
59	DX.ATTN	369	14	19	37	45	31	27	37	40	28	60	24	7
	TOTALS	606	32	34	53	58	54	41	72	63	56	76	39	28

Total cows listed : 159

Figure 4a: Top Productive Life Group

#	Event	Total	Jan22	Feb22	Mar22	Apr22	May22	Jun22	Jul22	Aug22	Sep22	Oct22	Nov**	Dec21
1	FRESH	167	11	12	19	15	15	9	16	22	11	17	10	10
12	ABORT	8	0	0	0	0	0	1	1	0	3	1	2	0
13	DNB	8	0	1	0	2	0	0	0	0	2	2	1	0
14	SOLD	25	1	4	2	2	3	3	2	3	2	0	3	0
15	DIED	5	0	0	0	0	2	0	0	2	0	1	0	0
36	LAME	42	5	1	3	7	5	6	5	2	2	5	0	1
37	MAST	6	1	0	0	0	0	3	0	2	0	0	0	0
38	METR	1	0	1	0	0	0	0	0	0	0	0	0	0
42	RP	2	0	1	0	0	0	0	0	0	0	0	0	1
59	DX.ATTN	503	17	18	43	39	49	23	60	53	78	82	35	6
	TOTALS	767	35	38	67	65	74	45	84	84	98	108	51	18
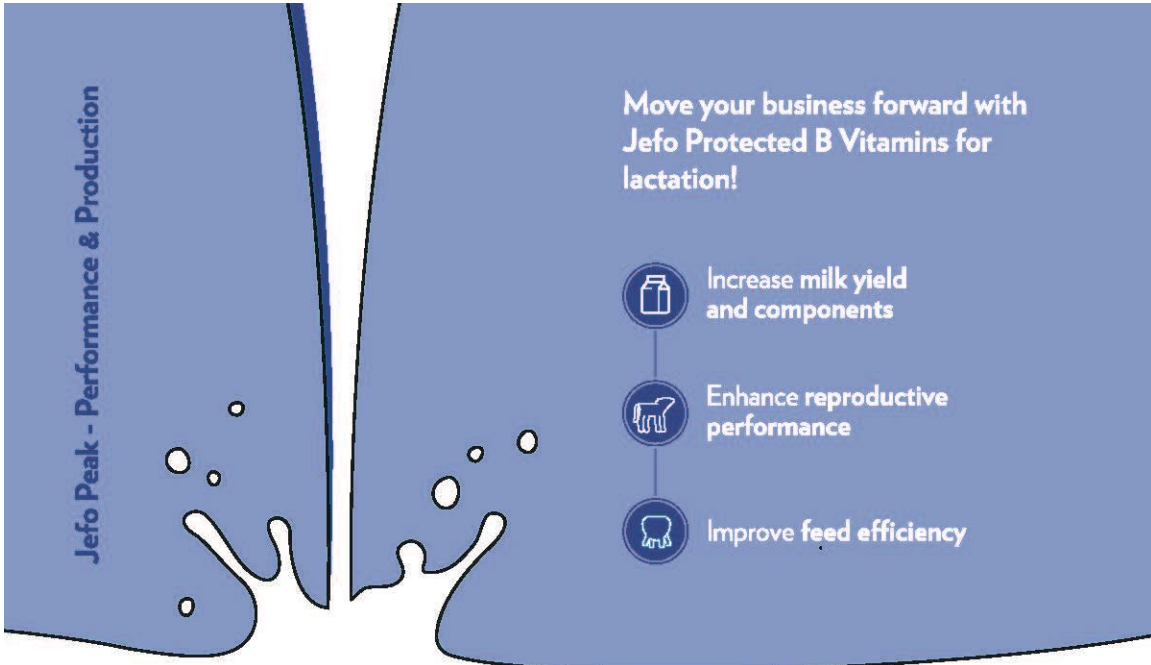
Total cows listed : 167

Figure 4b: Bottom Productive Life Group

Using rumination technology has allowed us to micromanage our cows, especially around the fresh cow period, while also allowing us to create standard operating procedures for employees to follow and maintain optimum herd health. By integrating the technologies into existing software platforms, we've been able to streamline efficiencies, and track and store data long term. I believe that there is a long-term place for sensory data with dairy cows and we are o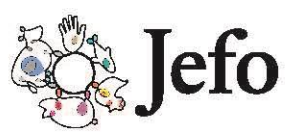nly just scratching the surface.