Lactanet

CANADIAN NETWORK FOR DAIRY EXCELLENCE

Transition Management Index: a new tool to assess the transition period success

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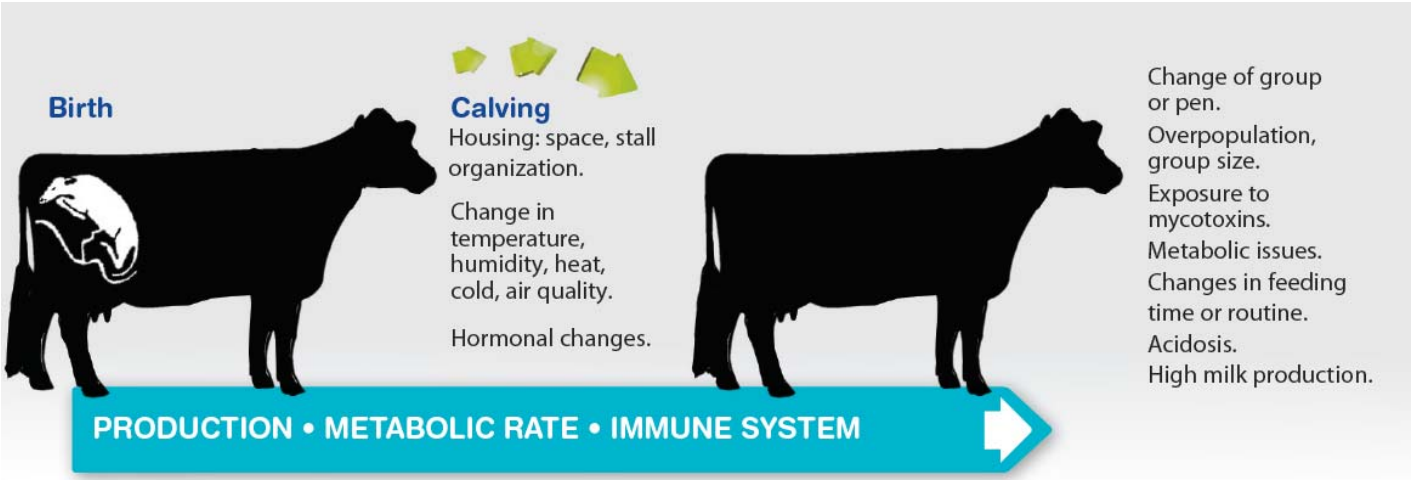
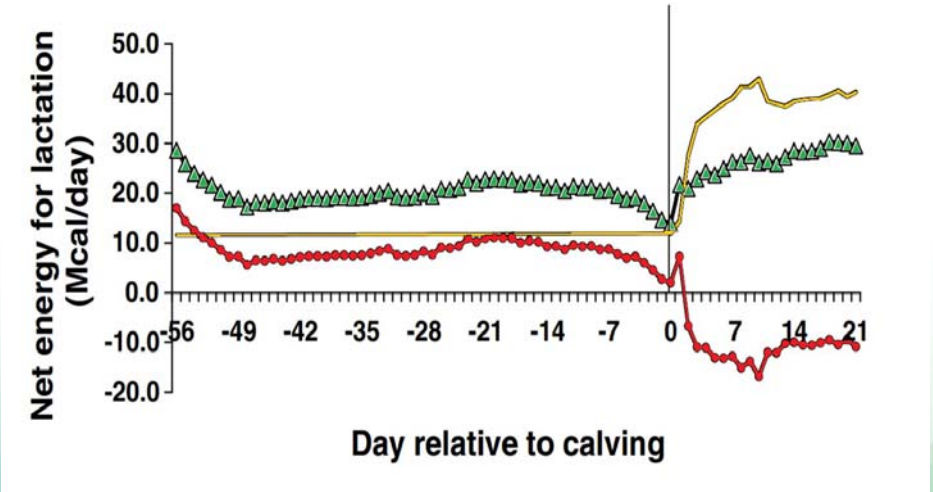
Introduction





Feed intake

Milk production

Energy Requirement

Energy Balance

Introduction

Transition Cow Index™

- Developed by Dr. Nordlund (2006)
- Using data from 4,000 hers enrolled to DHI Wisconsin

Since 2006, several improvements in management, nutrition, genetics…

An American index may not reflect the intricacies of the Canadian dairy industry…

Objective

Our objective was to create an index to assess the transition period of dairy cows using the Canadian data and benchmark current practices.

Connor McDavid

Plays for Oilers since 2015

Stats

ⓘ	Player	Season↑	Team	S/C	Pos	GP	G	A	P	+/-	PIM
1	Connor McDavid	2015-16	EDM	L	C	45	16	32	48	-1	18
2	Connor McDavid	2016-17	EDM	L	C	82	30	70	100	+27	26
3	Connor McDavid	2017-18	EDM	L	C	82	41	67	108	+20	26
4	Connor McDavid	2018-19	EDM	L	C	78	41	75	116	+3	20
5	Connor McDavid	2019-20	EDM	L	C	64	34	63	97	-6	28
6	Connor McDavid	2020-21	EDM	L	C	56	33	72	105	+21	20
7	Connor McDavid	2021-22	EDM	L	C	80	44	79	123	+28	45
8	Connor McDavid	2022-23	EDM	L	C	82	64	89	153	+22	36

Historical data

CONNOR MCDAVID

SCORING STATS

PRESEASON

SEASON	GP	G	A	P	+/-	PIM
2023-24 Oilers	4	4	3	7	8	0

Current preseason result

Calculate how we expect him to play in the next season

Calculate his performance now

Connor McDavid

Plays for Oilers since 2015

Historical data

He always played well – so we expect him to play well this season

Current preseason result

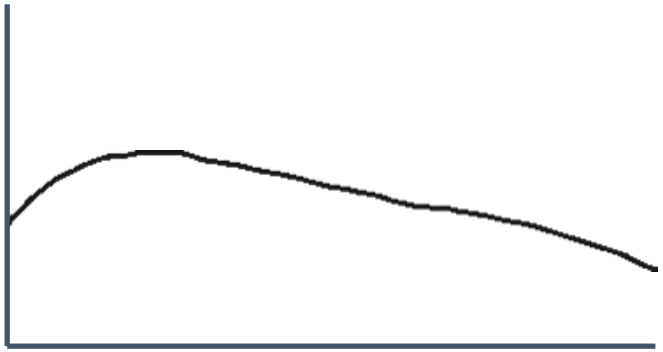
If his preseason is **good** – it means he had a good preparation, and he will perform according to expected

If his preseason is **bad** – it means he had a poor preparation, and he will perform worst than expected

Methodology

Animal info + historical data + calving month: to calculate estimated milk production

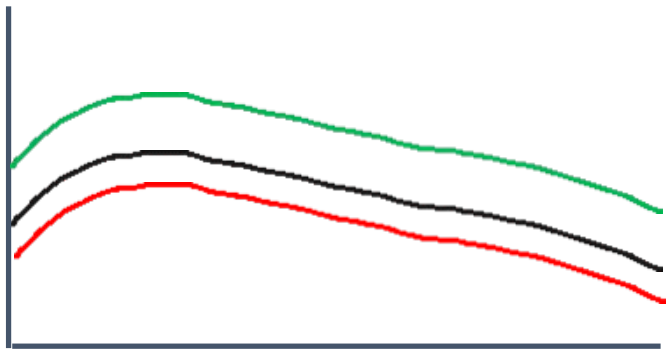
Kg milk



Days in milk

First DHI yield and components + calving month: 305d-projection

Kg milk



Days in milk

+TMI

= TMI

-TMI

Development of TMI

Data:

- 1.6 M DHI cow records
- 2017-2020
- All provinces in Canada
- Lactations 1 to 7
- 8 Breeds
- 3 Milking systems

Models:

- Separate for primiparous and multiparous cows
- Mixed-effect linear regression in R (lme4 package)

Key components of TMI

1. Breed
2. Lactation number (**2 to 7**)
3. Lactation start reason
4. DIM at 1st test
5. Milk yield 1st test
6. Calving Month
7. Milking frequency
8. **Milking pattern**
9. **EBV's (Milk, fat, protein)**
10. **BHB at 1st test**
11. **SCS at 1st test**
12. Previous lactation start reason
13. Previous lactation DIM
14. **Previous peak DIM**
15. **Previous peak milk yield**
16. Previous linear score
17. Previous 305d milk
18. Days dry

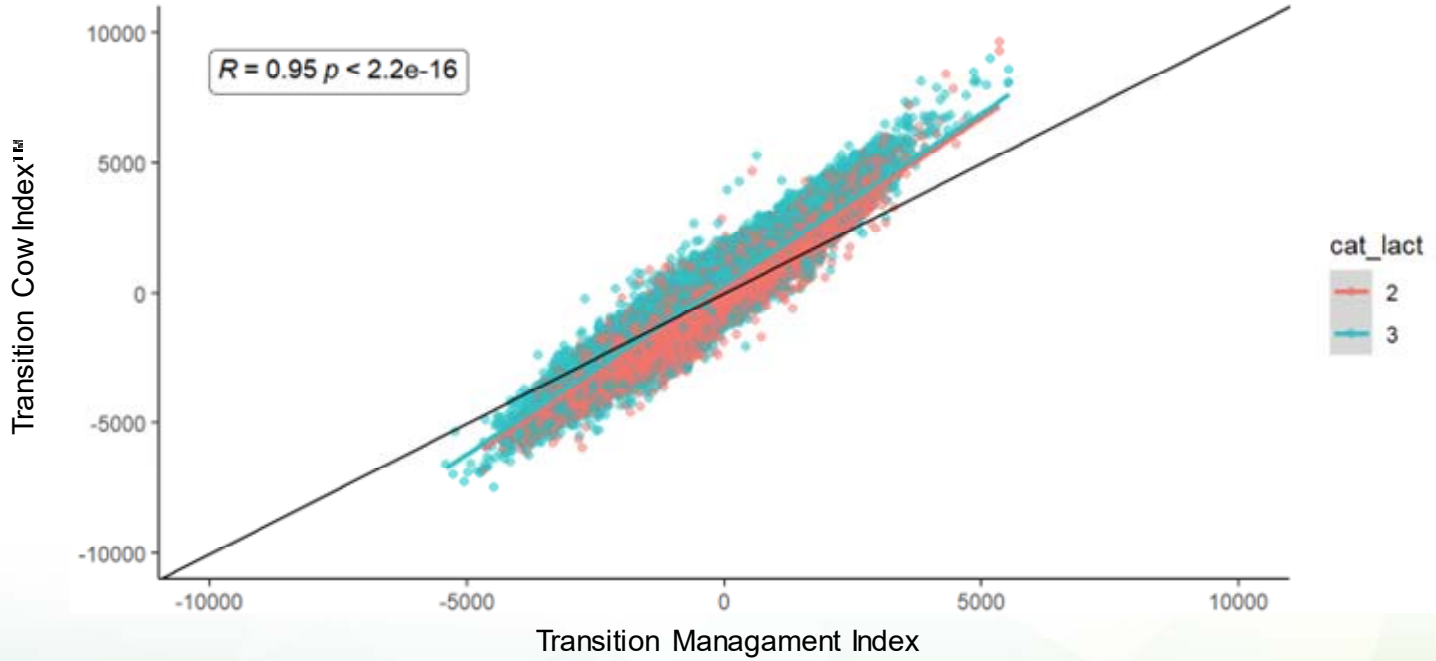
Multiparous

19. **Age at calving** → Primiparous

New in TMI

Results

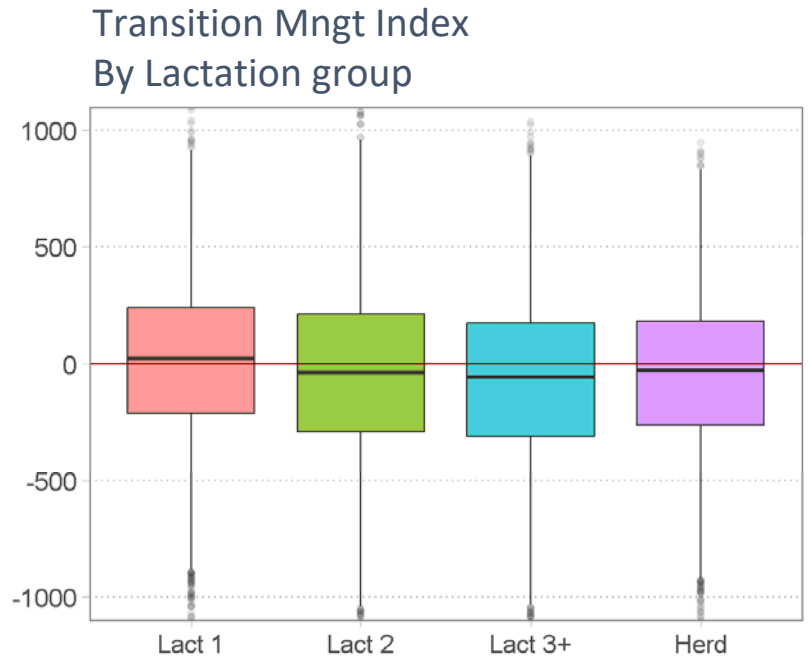
Strong correlation between TCI and TMI

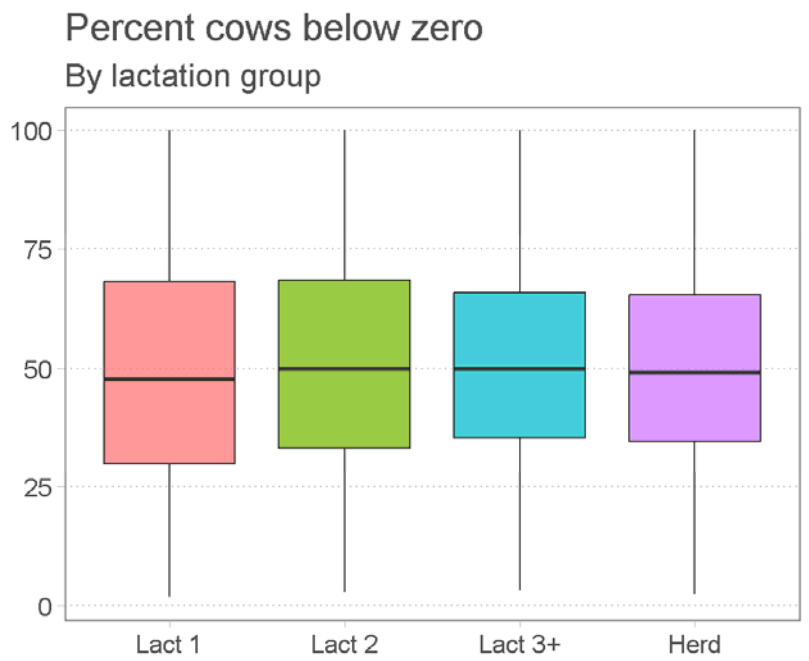


Results

Cow level – descriptive analysis

Lactation number





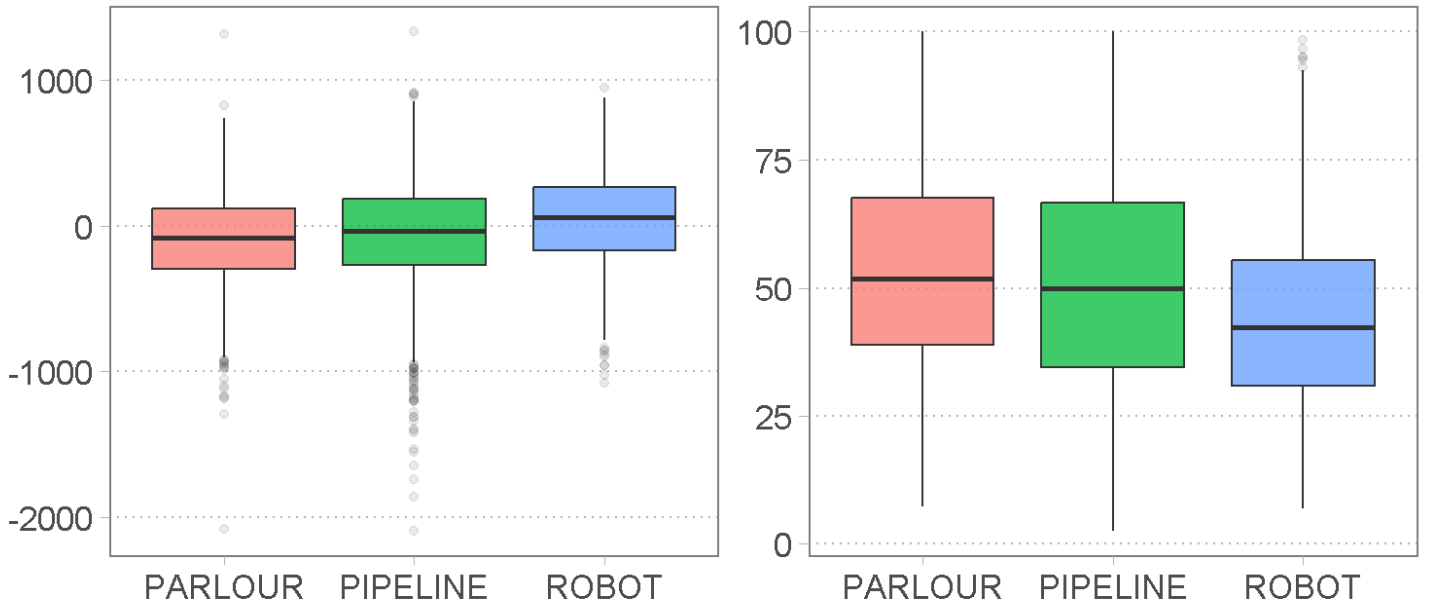
Averages:	Lact 1	Lact 2	Lact 3+	Herd
Transition Mngt Index	**25**	**-34**	**-55**	**-27**
Percent cows below zero	**48%**	**50%**	**50%**	**49%**

Relative metrics analysis demonstrated that, apart from breed, no variable exhibited greater importance for Lact 1.

Results

Herd level – descriptive analysis

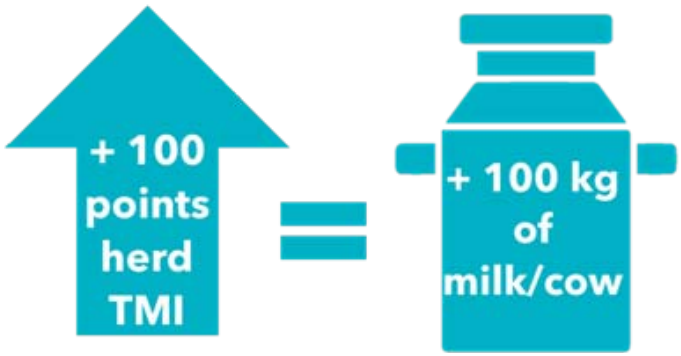
Milking system



Averages:	-100	-54	39
	53%	51%	44%

Results

Herd performance

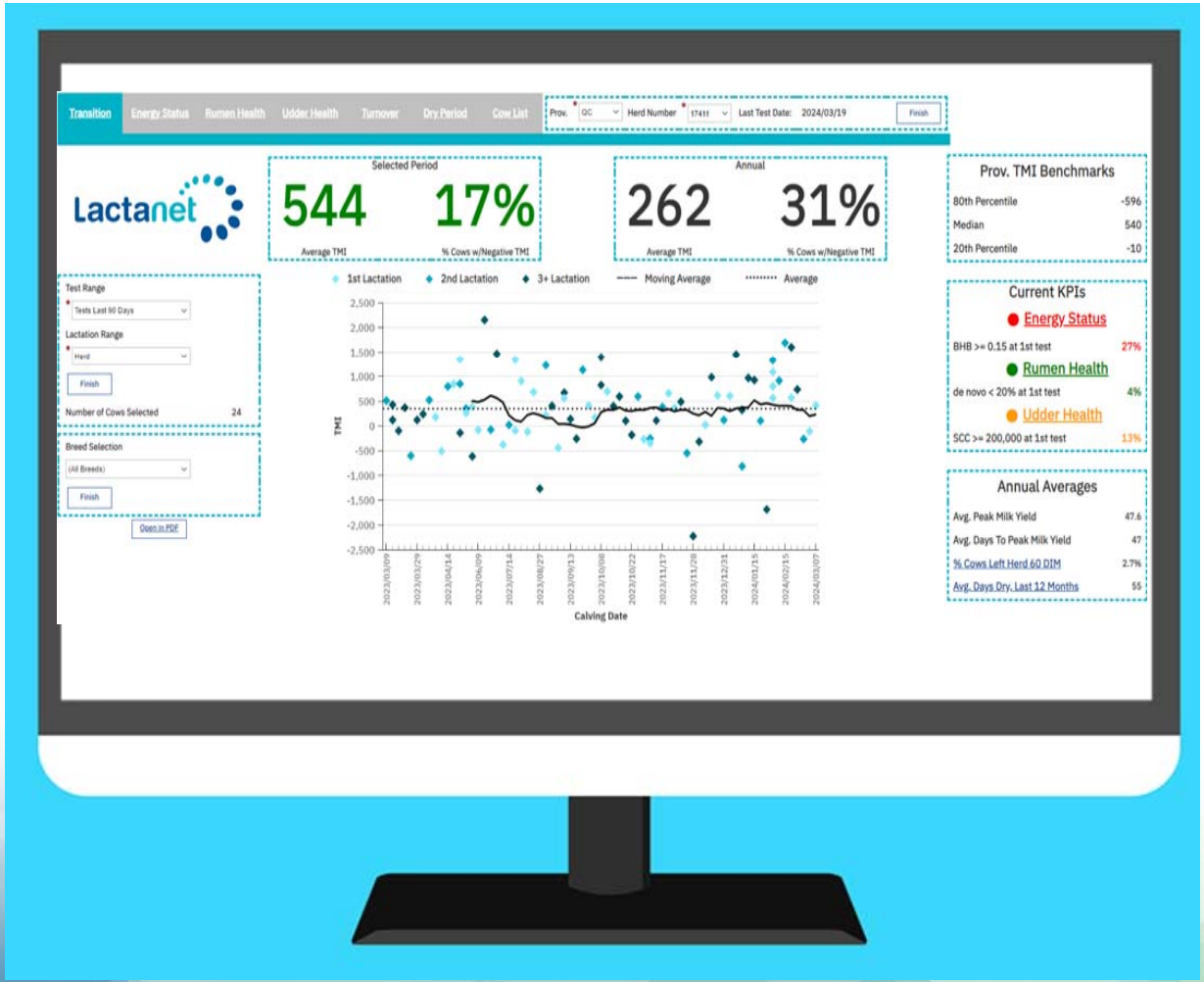


Top 20% of herds:

- ✓Low % of negative cows
- ✓Greater milk and components
- ✓Higher production at peak
- ✓Greater milk revenue

Results

Dashboard



INDICE DE TRANSITION MANAGEMENT INDEX

- Objectively monitor the transition period overtime
- Check indicators of **udder health, energy status, ruminal health, dry period...**
- Benchmark the current program and assess the success of different measures

Conclusion

- The Transition Management Index serves as an objective tool to assess transition period practices.
- TMI is correlated with metrics of herd performance
- TMI and its dashboard will guide producers and advisors to better assess the farm operation, identify opportunities for improvement, and facilitate decision-making.

Acknowledgements

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Thank You